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**OKLAHOMA STATE MEDICAL ASSOCIATION**



*In this issue:* Spontaneous Clostridial Infection  
Recent Advances in Radiation Therapy  
Reflections From an Orthoptist  
The Nutritional Factor in Atherosclerosis, A Model



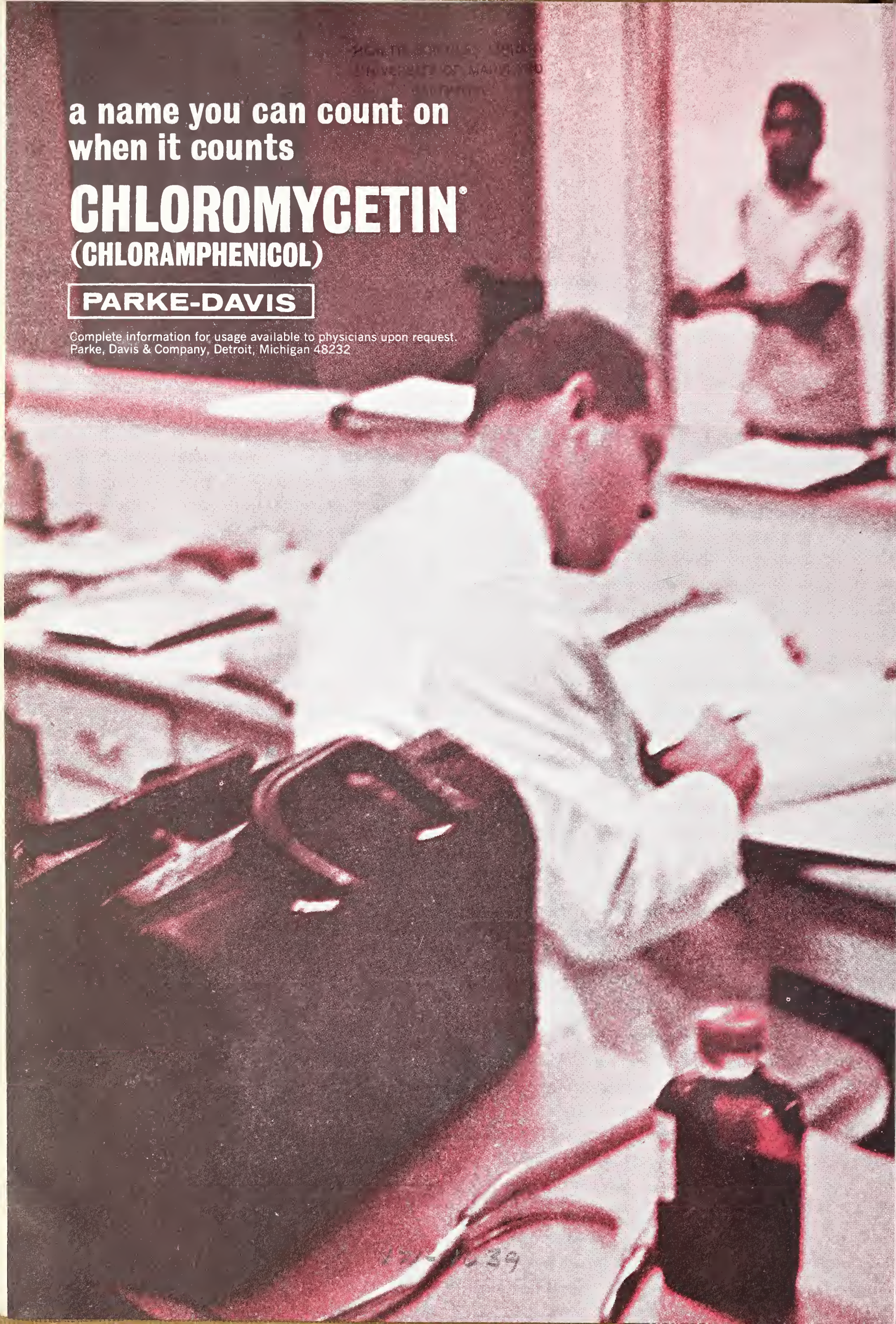
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## *Diet and Infrequent Peritoneal Dialysis in Uremia*

THE CLINICIAN concerned with the management of a patient with chronic renal failure is confronted with a therapeutic challenge. Because of widespread popular press dissemination of non-scientific information concerning renal transplantation and chronic dialysis techniques, the physician is frequently besieged with inquiries and is often "pressured" in to referring his patient to some distant center for such therapy. With the limited number of effective (based on experience) chronic hemodialysis and renal transplantation units now in operation, the patients who can be so treated constitute only a fraction of those destined to succumb annually to irreversible renal failure. All too frequently, the uremic patient must be returned to the referring physician with notification that the patient in question has been rejected for participation in such programs because of age, psychiatric, medical, socioeconomic or other reasons. Most of these contraindications are not absolute, but governed by the lack of adequate medical facilities to meet the need. These facts may be accepted by theoreticians but they do little to comfort the individual family or patient facing impending death in uremia. The original physician must accept the responsibility for management of the unfortunate rejectee's "terminal" uremic state.

Attempts at long term management of uremia by use of a low protein diet with amino acid supplementation were pioneered by Giovannetti and Maggiore.<sup>1</sup> Five out of eight patients demonstrated clinical improvement on this regime, and were rehabilitated to a near normal life at home. Berlyne *et al.*,<sup>2</sup> have reported similar encouraging results from the use of a modification of this diet. However, all their patients had some remaining renal function, and, in general, the clinical response of those with a creatinine clearance of greater than 3 ml./min./1.73 M<sup>2</sup> was better than those with lesser glomerular filtration rates. Therefore, the prognosis was correlated with the rate of fall of the glomerular filtration rate.<sup>2</sup>

There is room for cautious optimism regarding the management of "terminal"

uremia in the light of recent advances. Levin and Winkelstein<sup>3</sup> have reported the case of a 19-year-old anuric boy who has not only been kept alive but rehabilitated to a reasonably normal existence by a careful and restrictive diet together with peritoneal dialysis at three to four week intervals. The observation of this patient has been 22 months after the onset of anuria. Although only one case was reported in detail, the authors indicate that ten additional patients have been successfully treated in a similar manner but for a shorter time.

The method of therapy described by Levin and Winkelstein can be instituted at any community hospital where there is a physician familiar with the technique of peritoneal dialysis, a clinical chemistry laboratory and probably most importantly, a dietitian. Although the details of diet and frequency of dialysis depend somewhat on the remaining renal function and patient cooperation, the method described can be easily modified to fit the individual uremic patient.

This palliative approach seems justified as an interim measure to prolong life and productivity until such time as the immunologic problems of cadaver-kidney transplants are solved, and the procedure is widely available. Preliminary results of cadaver-kidney transplantation are encouraging,<sup>4</sup> and a nihilistic attitude toward "end stage renal disease" no longer seems justified. The former professional attitude of hopelessness toward uremia must be replaced by optimism based on dietary successes, dialytic methods, and ultimately renal homotransplantation.—

*James E. Wenzl, M.D.* □

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You may have noticed an occasional critical letter of the "Medicine and Religion" programs in the *AMA Journal*. Every member is privileged to be critical of any phase of the activities of organized medicine and this is to be applauded.

We could not advance if everyone said "Yes, it's great" about everything.

However, I want to go on record to testify there is a definite relationship between medicine and religion. As many of you know, I underwent heart surgery last May. I do not think I could have gone through this ordeal without the equanimity afforded me by my religious beliefs. After some pre-operative inner hesitation, I finally threw myself into my Maker's hands. I was thereby enabled to achieve an inner tranquility which inevitably helped in my recovery.

So let the skeptics have their say as they wish. For me, medicine and religion are

closely tied and always will be.

To emphasize the importance of this area to our profession, our association's Committee on Medicine and Religion is cooperating with the Oklahoma Council of Churches to jointly sponsor a statewide conference on the subject.

This conference will be held February 2nd and 3rd at the St. Francis Center for Christian Renewal in Oklahoma City. All state physicians and clergymen are being invited to attend to discuss the theme, "The Whole Man in a World of Changing Morals."

The discussions will be sparked by talks from The Reverend Doctor Paul B. McCleave, director of the AMA Department of Medicine and Religion, and from David Belgum, Ph.D., of Iowa State University's Schools of Medicine and Religion.

Both of these men are dynamic individuals whose ideas and views regarding the relationship of medicine and religion should be enlightening to both professions.

May I take this opportunity to urge you to attend this meeting. □

Maxwell A. Johnson



## Spontaneous Clostridial Infection

JOE L. SPANN, M.D., F.A.C.S.  
FRANK A. CLINGAN, M.D., F.A.C.S.

*One usually associates gas gangrene with war wounds, but this killer may complicate common illnesses. A high index of suspicion of this lethal entity is prerequisite for timely diagnosis and appropriate treatment.*

**GENUS CLOSTRIDIA** is a family of killers. Notorious examples are *Clostridia tetani* and *Clostridia botulinum*, which produce the specific diseases tetanus and botulism, respectively. Among the most feared member of this bacteriologic Cosa Nostra are *Clostridia welchii*, *septicaemia*, *oedematiens* and *histolyticum*, which may produce severe and often fatal infections.<sup>4</sup> These infections are commonly called gas or gaseous gangrene, but are better classified as either *clostridia cellulitis* or *myositis*. The bacteriology of gas gangrene is not specific, but complicated. As stated by Weinberg and Sequin, "There is, in effect, a typical form of gaseous gangrene, (a) not always produced by the same microorganisms, (b) is frequently caused by several assorted agents, (c) often the complex result of combined actions of the principal anaerobic bacilli with various other bacteria, which play indeterminate, accessory roles."<sup>10</sup>

*Clostridia* may be identified morphologically as gram-positive, spore-bearing bacilli. Physiologically they are anaerobic and elaborate powerful exotoxins responsible for massive tissue destruction, shock, and death. To describe their distribution as ubiquitous is trite, but accurate. They are normal constituents of the human intestinal flora, and are present in the biliary tree in a significant number of people.<sup>6</sup> Their presence in barnyards and battle fields is well known, and is responsible for established surgical principles of adequate debridement of what we shall refer to as "war wounds."<sup>3</sup> A war wound implies, 1. massive tissue destruction, 2. gross contamination, 3. probable retained foreign bodies, 4. possible ischemia from arterial disruption, and 5. situations of delayed debridement.

It is pertinent to review the high mortality figures of World War I from gas gangrene, compared to the almost non-existent problem in the Korean War.<sup>7</sup> In the British Expeditionary Force of World War I, 12 per cent of the wounded men developed gas gangrene. Twenty-five per cent of this group died. John Howard reviewed 4,900 consecutive war wounds from the Korean conflict and found only four cases of gas gangrene, none of whom died.<sup>3</sup> This suggests that surgeons have learned the importance of debridement, but other contributing factors must include, 1. helicopter evacuation of wounded allowing early debridement, 2. primary arterial reconstruction for the



first time in military surgical history, 3. antibiotics.

Meanwhile, back at the civilian front, we are occasionally overwhelmed by clostridial infection complicating what should be a routine surgical problem that has no resemblance to war wounds. It is our misfortune to have a personal series of five such cases of spontaneous, clostridial infection in non-trauma problems.

#### CASE REPORTS

Case #1 is a 74-year-old white man, previously reported.<sup>8</sup> Six months before admission to Hillcrest Medical Center, January 1956, the patient had subtotal gastrectomy for benign prepyloric peptic ulcer. The patient's post-gastrectomy course was uncomplicated. He regained his preoperative weight and strength, and returned to his usual occupation, managing a hardware store. Twenty-four hours before this admission, he had an onset of recurrent colicky abdominal pain, followed by nausea and emesis. He was hospitalized with a tentative diagnosis of mechanical bowel obstruction which was confirmed by x-ray examination. Pertinent findings of physical examination were a distended, diffusely tender abdomen. The evening of admission a laparotomy was performed. The findings were a gangrenous loop of ileum, and dark foul smelling fluid commonly seen in strangulation obstruction. A culture of the fluid was not made. The infarcted bowel was resected and intestinal continuity was restored by end-to-end anastomosis. Through and through retention sutures of #1 silk were inserted in addition to the usual layer closure of the laparotomy wound.

His immediate postoperative condition was satisfactory. Nasogastric suction was continued, and fluid and electrolyte balance was maintained with intravenous fluids. Additionally, he received 500 mgm. chloramphenicol every 12 hours. He did well for 18 hours following surgery when there was an abrupt onset of severe abdominal pain accompanied by fever. A rapidly spreading discoloration of the anterior abdominal wall was discovered as his general condition de-



Figure 1. Case 1. Patient in shock, morning of second postoperative day. Note distribution of gangrene limited by attachment of deep subcutaneous fascia and old abdominal scar.

teriorated. He was in extremis the morning of the second postoperative day. Besides the bronze discoloration of the skin, a distinctive odor and crepitation of the involved tissues was recorded (figure 1). A gram stain of exudate obtained from the wound showed gram positive, spore-bearing rods. Bacteriological culture later identified this as *Clostridium septicum*. Treatment included large doses of antibiotics, multiple therapeutic doses of polyvalent anti-gas gangrene serum and whole blood to combat shock. Local wound treatment consisted of removal of retention sutures, opening of the superficial portions of the wound, and packing the open wound with hydrogen peroxide dressings. The patient's hospital course was stormy, prolonged and included all the common and most uncommon complications. By the ninth postoperative day, all necrotic skin, subcutaneous fat, and most of the musculofascial structures of the abdominal

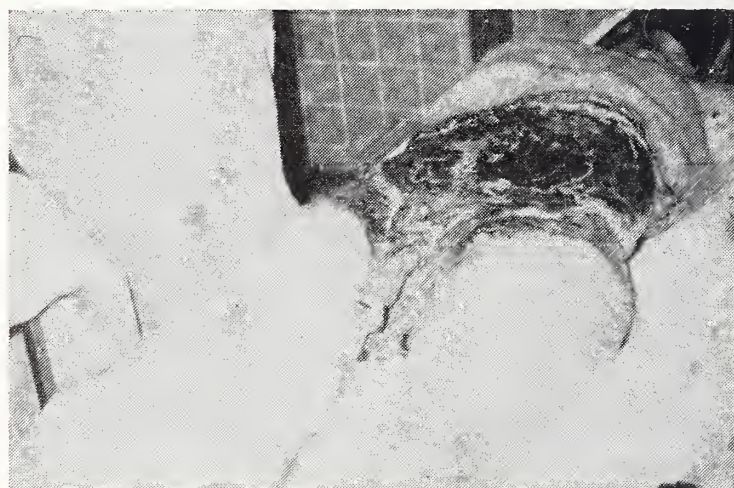


Figure 2. Case 1. Debrided abdominal wound. Full thickness loss of skin, fat, and most of musculofascial layers of abdominal wall.





Figure 3. Case 1. Partial coverage of abdominal wound with homografts, postmortem and antemortem. Postage stamp grafts are autografts.

wall had been excised (figure 2). Reconstruction included the use of postmortem homografts (figures 3 and 4). Eventually we were able to start definitive grafting with postage-stamp autografts (figure 4). Figures 3 and 4 depict the series of homografts-autografts, and figure 5 show the abdomen after it had healed. He returned to work approximately one year later without abdominal muscles, but wearing a corset.

Comment: Important specific factors of this case were the introduction of pathogens from the dead bowel into the laparotomy incision and the use of retention sutures which undoubtedly compromised the blood supply of the rectus muscles, creating an anaerobic environment and crushed muscle.

Case #2 is a 79-year-old white woman admitted to Hillcrest Medical Center in May, 1965 with clinical manifestations of acute spreading peritonitis. Her past history included a gastroenterostomy 50 years earlier for peptic ulcer. Nine years ago, the



Figure 4. Case 1. Extent of tissue loss in right flank. Homograft take.

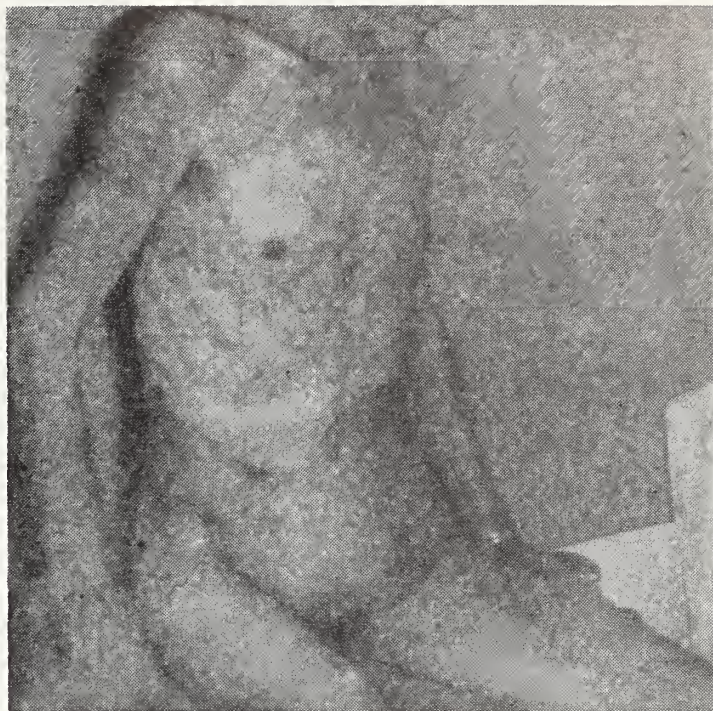


Figure 5. Case 1. Complete healing, but loss of abdominal fascia and muscles.

patient had an episode of gastrointestinal hemorrhage, but no recurrences. Six months prior to this admission, the patient had vague abdominal distress and an upper gastrointestinal series was interpreted as a possible gastroileostomy. The patient refused the recommended surgical treatment. Her admission diagnosis was, perforation of marginal ulcer, with peritonitis. Laparotomy, May 17, 1965 confirmed the diagnosis of

---

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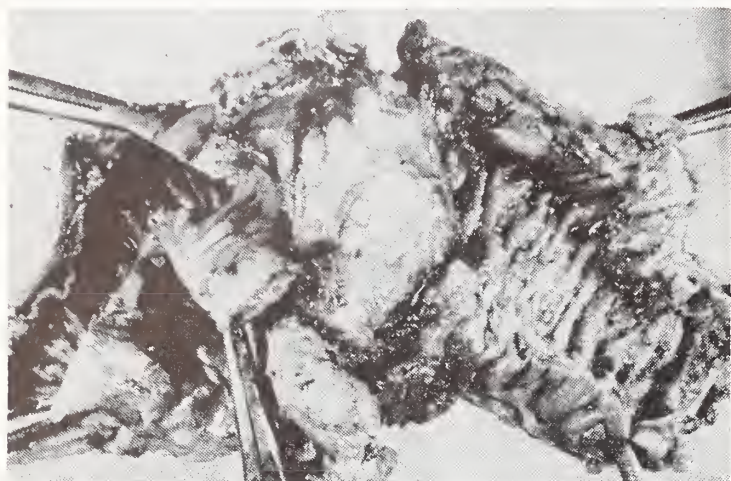


Figure 6. Case 2. Resected small bowel showing invasion by ovarian carcinoma with fistulization.

diffuse peritonitis. A pelvic mass was identified with which two loops of the small bowel were inseparable. There was a perforation and fistulization between the mass and one of the loops of the small bowel (figure 6). A normally positioned and functioning gastrojejunostomy and normal duodenum were found. Grossly, the mass was considered to be neoplastic. The mass and adherent loop of small bowel were resected and intestinal continuity restored with an end-to-end anastomosis. A catheter gastrostomy was also established.

The patient tolerated the operative procedure poorly. Atrial fibrillation noted at conclusion of the procedure was quickly converted to a normal rhythm. She did fairly well for 24 hours but at the end of the first postoperative day, she was in shock, had a high fever and her condition was deteriorating rapidly. On examination of the anterior abdominal wall and proximal thighs exten-

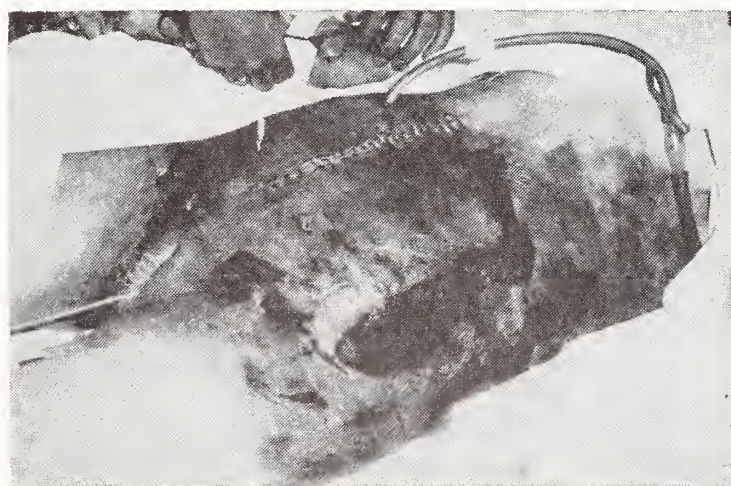


Figure 7. Case 2. Extensive ecchymosis and destruction of abdominal wall by gas gangrene.

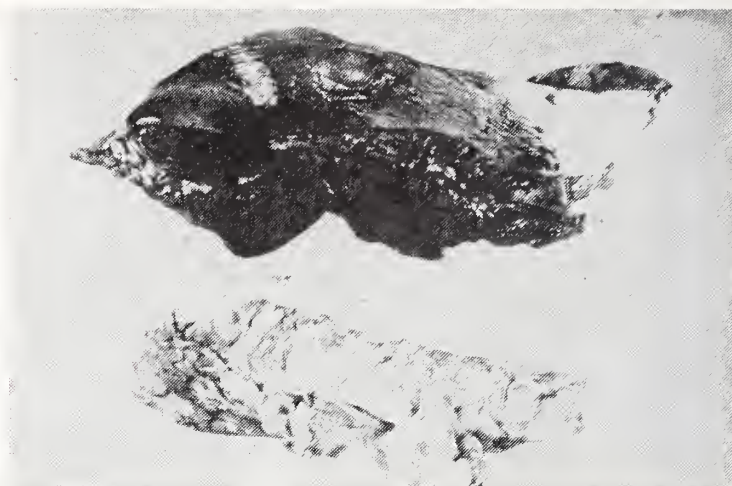


Figure 8. Case 2. Cross section showing involvement of all layers of abdominal wall with site of gas gangrene, and below showing normal abdominal wall.

sive ecchymosis was found (figure 7). The tentative diagnosis was clostridial myositis. Massive doses of antitoxins, antibiotics, and vigorous supportive measures were begun. Her condition continued to deteriorate, and she expired five hours after the first evidence of complications. Permission for an autopsy was granted. The gross specimen of the abdominal wall at autopsy is shown in figure 8. Complete pathology report was, (1) papillary adenocarcinoma of ovary (figure 9), (2) neoplastic adhesions of the intestinal loop, extensive infiltration of the wall of the small bowel, penetration and fistulization, (3) severe necrotizing cellulitis of intestinal wall surrounding the area of tumor infiltration, from which *Clostridia welchii* was cultured, (4) clostridial myositis of pelvis and abdominal wall.

Comment: This elderly debilitated patient had diffuse peritonitis from perforation of the bowel from an invading primary cancer of the ovary. The peritonitis had an inocu-

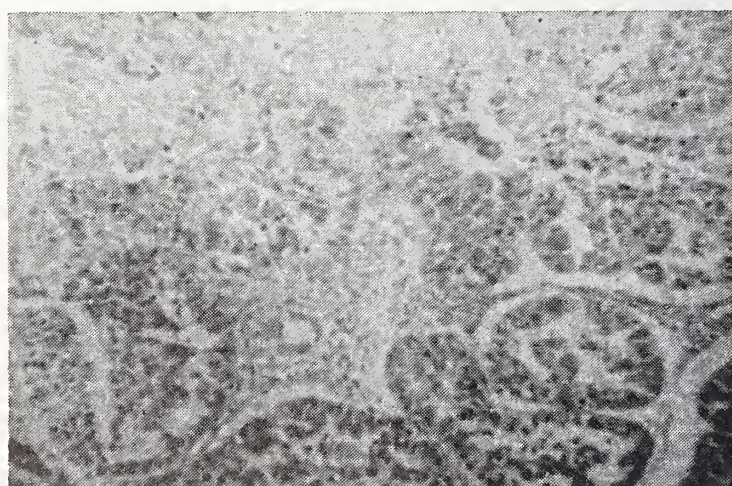


Figure 9. Case 2. Photomicrograph of carcinoma of ovary.



lum of clostridia, from the small bowel. The necrotic neoplasm provided an adequate substrate for clostridia to produce clostridial myositis and death.

Case #3 is a 71-year-old white man admitted to Hillcrest Medical Center on December 25, 1965. He had been hospitalized elsewhere for three weeks with a tentative diagnosis of myocardial infarction but serial electrocardiograms and enzyme studies did not support this diagnosis. Three days prior his transfer to Hillcrest, the patient's illness became more severe with right upper quadrant abdominal pain accompanied by nausea and emesis. On examination of his abdomen tenderness and muscle spasm were evident in the right upper quadrant. No masses were palpable. He was severely dehydrated, but afebrile and was not jaundiced. The white blood cell count was 19,000 with a distinct shift to the left. Our working diagnosis was acute cholecystitis and severe dehydration.

In a few hours a good urinary output was established. He stated that he had less pain, and it was noted that the nasogastric tube was returning bile-stained material. This regimen was continued overnight and on re-

examination, he appeared further improved. He remained afebrile and was hungry. The abdominal findings remained essentially the same; specifically there was no evidence of spreading peritonitis. The patient was started on clear liquids, and oral cholecystogram was attempted the following day. This showed no opacification of the gallbladder, but rather a gas-filled viscus thought to be the gallbladder (figure 10). Immediate surgical intervention was advised for acute emphysematous cholecystitis. The surgical findings were a subhepatic abscess surrounding a gangrenous gallbladder with a gross perforation through which extruded a 1.5cm. gallstone. Aerobic and anaerobic cultures were made from the exudate. As a cholecystectomy was performed, a sump suction device was placed at the gallbladder fossa in addition to our usual penrose drain. The postoperative diagnosis was clostridial cellulitis of the gallbladder. A therapeutic dose of polyvalent anti-gas gangrene serum was given intravenously. Four hours postoperatively the patient was hypotensive. Central venous pressure monitoring showed low central venous pressure, therefore, two units of whole blood were given to the patient. The patient's blood pressure stabilized, urine output continued satisfactorily and his remaining postoperative course was uncomplicated, with wound healing per primum. The patient's fasting blood sugar was normal prior to his discharge on the ninth postoperative day. Final pathology report was acute necrotizing cholecystitis. A clostridium was found in the wall of the gallbladder and was grown from the exudate. It was identified as *Clostridium sporogenes* by its pro-

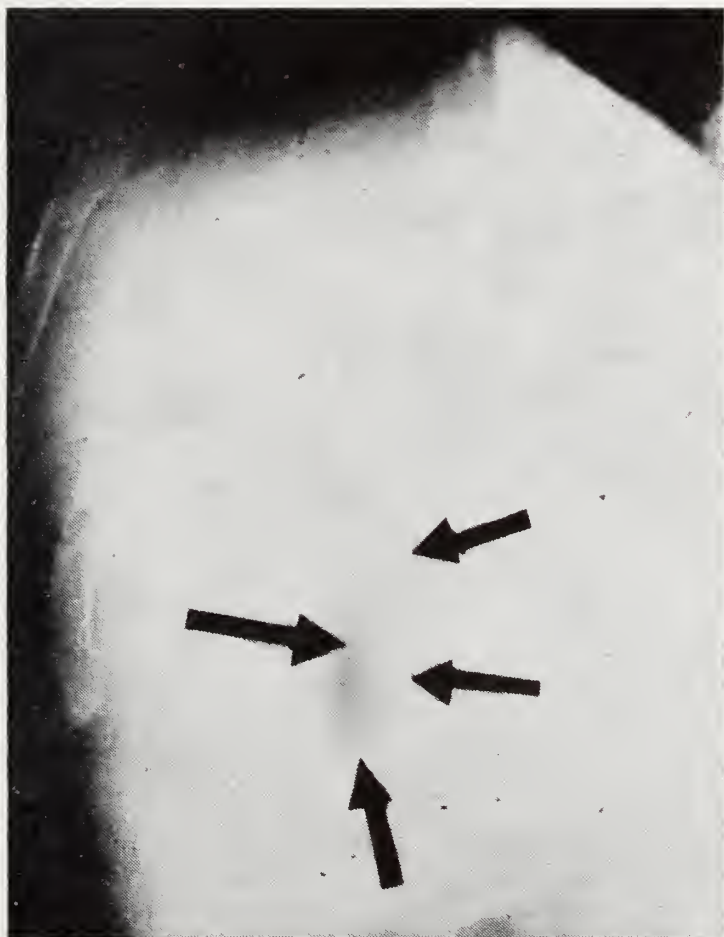


Figure 10. Case 3. Cholecystogram showing gas filled gallbladder, outlined by arrows.



Figure 11. Case 4. Edema of entire extremity shown by pitting edema.





Figure 12. Case 4. Edema has now crossed inguinal ligament on to abdominal wall. No gas bubbles clinically, or by roentgenographic examination. Pure culture of *Cl. oedematiens*.

teolytic characteristics. It failed to kill a guinea pig with inoculation. Also grown from the culture was *E. coli*.

Admittedly, the gas formation demonstrated by x-ray could have resulted either from *E. coli* or clostridia. Only seven per cent of the gallbladders which are not acutely inflamed show positive bacteriological cultures, whereas, in the presence of acute cholecystitis, 74 per cent of the gallbladder walls show positive cultures. (I) *E. coli* is the most common organism found in the biliary tree followed by streptococci, staphylococci and clostridia in order of frequency.<sup>6</sup> Gordon-Taylor found that of 50 gallbladders removed at operation, nine per cent had *Clostridia welchii* on culture of the wall, bile, or stones.<sup>2</sup> Marshall and Hartzog reviewed this group of acute emphysematous cholecystitis, and found that 78 per cent were



Figure 13. Case 4. Demarcation with minimal tissue loss (great toe), after control of clostridial oedematiens infection with antibiotics.

males, 30 per cent of them diabetic.<sup>5</sup> Robert Sparkman has reported three additional patients with acute emphysematous cholecystitis in which *E. coli* was the predominant organism.<sup>9</sup> He regards this organism as lethal as clostridia in the diabetic patient. In view of the tendency of the diabetic patient to develop gas gangrene of the biliary tree, he recommended that broad spectrum antibiotics be administered prophylactically to all diabetic patients undergoing surgery of the biliary tract.

Case #4 is a 50-year-old white man admitted to Hillcrest Medical Center in 1951. He had treated himself for an infected ingrown toenail. His foot became edematous and painful necessitating hospitalization. Elevation of the foot, warm moist dressings, and penicillin were without apparent symptomatic benefit. Erythema and edema progressively involved all the lower extremity (figure 11). The initial diagnosis was thrombophlebitis. Only after the edema had crossed the inguinal ligament, ascending the lower abdomen, was a specific edema-producing infection considered (figure 12). This clinical impression was confirmed with the growth of *Colstridium oedematiens* from the wound. The patient eventually recovered with minimal tissue loss (figure 13).

Case #5, a 69-year-old man was admitted because of high fever associated with weight loss and upper abdominal distress. Fourteen months previously he had a radical pancreatoduodenectomy for carcinoma of the head of the pancreas. He remained symptom free until three to four months before this admission.

Repeated laboratory studies and blood cultures were negative, including studies to determine febrile agglutinins. The patient was not jaundiced after the first few weeks following the pancreatoduodenectomy.

Investigation of the febrile course was frustrating and inconclusive, but the tentative diagnosis was pancreatic abscess. Another possibility was stenosis of the choledochojejunostomy, however this should have been accompanied by jaundice. The investigations included liver scan and lymphangiogram to delineate the retroperitoneal nodes. There was no evidence of metastases. Although there was no objective evidence to support our impression, it was still consid-



ered likely that he had a recurrence of metastasis from the pancreatic carcinoma. At laparotomy stenosis of the choledochojejunostomy was demonstrated.

The operative procedure was of splenectomy, completion of the total pancreatectomy, resection of the three previous anastomoses and the intervening jejunum, and restorative anastomosis of the common duct, end to side to jejunum, and stomach end to side to jejunum.

The patient's pyrexia was controlled during surgery with ice bags to the extremities and cold irrigation solution in the peritoneal cavity. His immediate postoperative course was satisfactory and he was maintained on a hypothermic blanket at norm thermic conditions.

He did well for 12 hours postoperatively when he suddenly became hypotensive, and was noted to be deeply jaundiced. The etiology of the sudden jaundice was not explained satisfactorily at this point. Hemolysis of transfused blood seemed unlikely, as did obstruction of the common bile duct in view of the large polyethylene tube in the bile duct—jejunal anastomosis acute atrophy of the liver and the possibility of fluorothane anesthesia complicating a pre-existing bile duct obstruction producing so-called hepatorenal syndrome were also considered.

Despite energetic measures to resuscitate the patient he expired the day following surgery. There was no bacterial growth obtained from the bile duct aspirate at the time of surgery, which was especially surprising in view of the autopsy findings.

Autopsy gross findings were: 1. Large purulent abscess in the left lobe of the liver containing Gram positive bacilli consistent with *Clostridium* species, with a diffusely foamy liver (figure 14). Microscopic examination showed diffuse necrosis with many gas cysts associated with bacilli consistent with *Clostridial* species (figure 15). 2. Status post Whipple procedure for adenocarcinoma, head of pancreas, August 1966. 3. Status post partial gastrectomy and splenectomy, with resection of tip of common bile duct, tail of pancreas. 4. Choledochojejunostomy, patent, intact. 5. Gastroenterostomy, patent, intact.

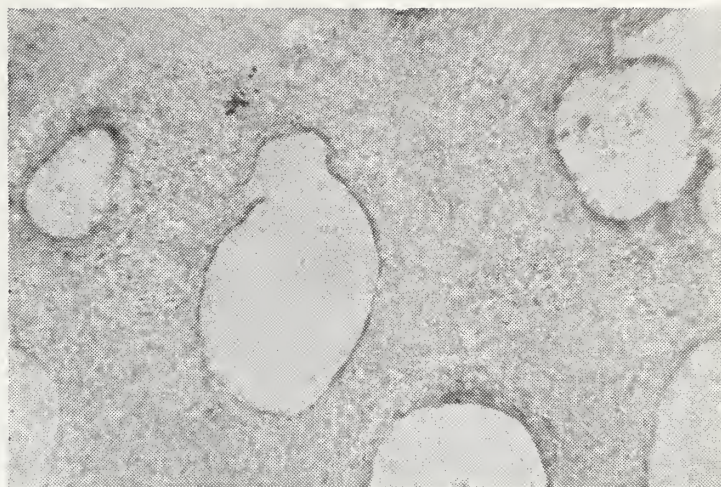


Figure 14. Case #5. Cut surface of liver showing large abscess of left lobe.

## DISCUSSION

I. The most effective treatment for gas gangrene is early surgical excision of the infected wound. The anatomy of the abdominal wall does not encourage radical excision, particularly in the period immediately following abdominal surgery. One has to compromise with wide decompression of the fascial planes after re-opening the original laparotomy wound. Cholecystectomy was adequate for removal of devitalized tissues in Case #3. II. We believe that therapeutic doses of polyvalent antitoxins for gas gangrene are valuable but this treatment remains controversial. III. Energetic supportive therapy is required to combat the severe shock. Central venous pressure monitoring is helpful in treating elderly patients with questionable cardiac reserve. IV. Large amounts of antibiotics intravenously are re-

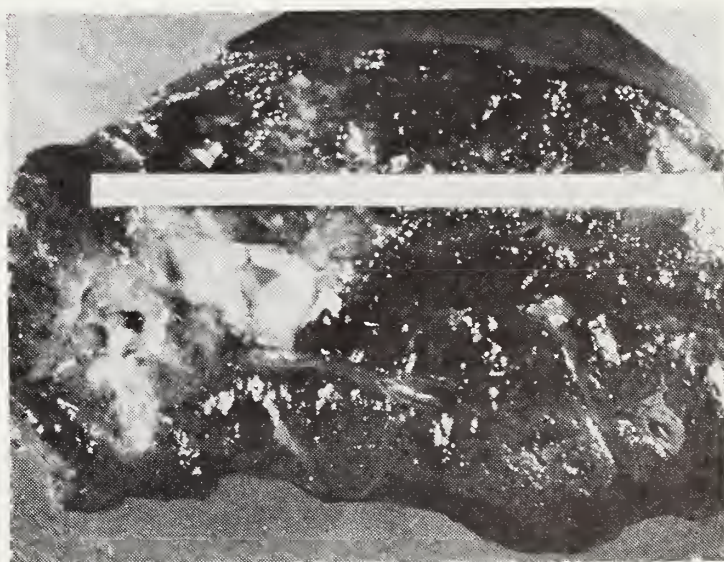


Figure 15, Case #5. Note swiss cheese appearance from gas production with innumerable clostridia evident in tissue.



## *Infection* / SPANN, CLINGAN

quired. Penicillin, tetracycline, and chloramphenicol are all useful, but none will save the patient's life, without excision of the infected wound. V. Local wound treatment should include agents which liberate oxygen. Hydrogen peroxide is more conveniently administered than activated zinc peroxide. Hyperbaric oxygenation is probably beneficial in anerobic infections including gas gangrene. Evidence appears to favor the concept that hyperbaric oxygen alters the organisms' ability to produce lethal toxins although the organism remains viable.

### SUMMARY

Gas gangrene has a complicated bacteriology, but clostridial infections can occur when clostridia are placed in devitalized tissues. Clostridia are always with us, even after so-called bowel sterilization. Devitalized tissue is a common product of many spontaneous diseases, *i.e.*, infarcted bowel from strangulation obstruction, and necrotizing cholecystitis.

Effective treatment requires:

1. early diagnosis

2. excision of wound
3. antibiotics
4. local oxygen
5. antitoxins
6. supportive measures
7. hyperbaric oxygenation

These treatments are not necessarily listed in the sequence of their importance, but, ideally, they should be accomplished instantly and simultaneously. □

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# Recent Advances in Radiation Therapy

CARL R. BOGARDUS, JR., M.D.

*Within the foreseeable future it will be possible to control cancer by means of radiation therapy combined with surgery and drugs under the guidance of the radiobiological behavior of the patient's tumor.*

**RADIATION THERAPY** as a specialty was born out of the findings by the very earliest workers with x-ray that this mysterious new ray could actually destroy tissue. The early discoveries of the properties of x-ray and radium soon led physicians to using these two modalities in the treatment of cancer.

Following the early discovery of the effects of radiations on living tissues Bergonie and Tribondeau worked out many of the early ground rules of cellular sensitivity to x-ray. Many of the basic principles of radiation therapy were laid down in the 1920's by the man who has often been called the father of radiation therapy, Henri Coutard. This work was followed in the 1920's and 1930's by a number of classical papers by Coutard, Regaud, Lacassagne, and Gricoureff, establishing many of the basic

principles on which modern day radiation therapy is founded.

The field of radiation therapy advanced rapidly and in the late 1930's the first one million volt x-ray machines were used for radiation therapy. Out of this period arose a group of dynamic and aggressive radiation therapists, many of whom are still directing the course of the specialty of radiation therapy today. Most prominent among these people were del Regato, Buschke, and Cantril.

In the late 1940's sophisticated super-voltage machines became available to many of the centers which had already attained a good measure of success in the treatment of malignant disease by radiation therapy. In 1951 the first cobalt units were installed, and with them came a resurgence in the need for good radiation therapy and for people adequately trained to use this modality in the treatment of cancer.

A new generation of radiation therapists has now arisen on a strong foundation from the teachings of the old masters, but with a driving desire to not only attain good clinical radiation therapy, but to more fully understand the how and the why of radiation therapy.

## RADIATION BIOLOGY

Radiation biology, or the effects of radiations on living tissues and cells in culture, in animals, and in man has grown over the

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past few years to occupy a very important position in the field of radiation therapy. The basic concepts of radiobiology were laid down many years ago by some of the earlier workers in this field. There was a marked revival of interest in the mid 1950's. Since this time newer techniques and a more sophisticated approach to the subject have made it possible to analyze the results obtained in a far more quantitative and precise way.

Many recent advances over the past few years in cytogenetics and the development of new techniques for the cultivation of mammalian cells *in vitro* have been combined to revolutionize our concepts of the organization and internal regulation of animal cells. A little over ten years ago some of the initial results on mammalian cell survivals were reported by T. T. Puck in the *Journal of Experimental Medicine* (1956). At that time there were no reliable data on tumor kinetics, differential sensitivity within the cell cycle, information on radiation injury or recovery and very little information on time dose relationships.

It was felt for many years that a basic difference between cells of one type of tumor and another was the only responsible factor for the difference of radiosensitivity. Based on this hypothesis, however, it was very difficult to explain the wide variety of radiosensitivity within any given type of tumor not only from patient to patient but within the same individual. Today we have new insights into recovery, sensitivity within the cell generation cycle, the role of linear energy transfer to living cells, relative biology effectiveness, and the importance of oxygen tension. Present research is aimed toward a new concept of cell kinetics as related to the multiplication of cells within tumors and normal tissues.

More recent studies in this field have drawn very close parallels between cell generation cycles and dosage fractionations (treatment schedules) with the subsequent application of cell kinetics into the domain of cancer radiation therapy.

Predictably at the rate which radiation biology is progressing it will be possible within the next ten years to biopsy a pa-

tient's specific tumor, grow the tumor cells in culture and very rapidly determine the sensitivity of the individual tumor to radiation therapy, chemotherapy, or other modalities unknown at this time. It will then be possible to tailor the patient's cancer treatment program exactly to the individual cell behavior of his particular tumor.

### TIME-DOSE RELATIONSHIP

During the past few years experimental studies have been carried out with a new look at the long standing problem of time-dose relationship which has existed since the beginning of clinical radiation therapy. Based on the results of experimental radiobiological findings the greatest cellulicidal effect (cell killing) is obtained by a single dose of radiations. This, however, is quite hazardous in patients due to the concomitant damage to normal adjacent tissues necessarily included in the irradiated volume. For this reason fractionation of dosage schedules has developed of necessity.

The effects of dosage fractionation can be demonstrated easily by the various types of fractionation schedules available for treatment of carcinoma of the skin which may be adequately treated by radiation therapy with a variety of dosage schedules and with an equal variety of cosmetic results but with similar cure rates. The variation among the various cosmetic results is demonstrated by the two extremes where 2,000 rads are delivered in one treatment as contrasted to 6,000 rads being delivered in a period of 30 daily treatments. Both cases will cure the skin cancer but only the latter case will give a perfect cosmetic result. This example serves to illustrate two underlying principles. (1) The long term fractionated treatment schedule allows normal tissues to repair and recover between treatments so that the final results will be good cosmetically. (2) The cancerous tissue is also allowed to partially recover and repair between treatments requiring a much higher total dosage of radiations to be delivered for a cure to be achieved.

Cellular radiobiological data which has accumulated over the past few years indicates beyond a doubt that the maximum efficiency of cell-killing is accomplished with



the least number of fractions being delivered.

The advent of supervoltage radiation therapy equipment has now given us the means of delivering an adequate dosage of radiations to almost any tumor within the human body. We now have the ability to deliver a course of radiation therapy in a shorter time due to a decrease in the adverse side effects which previously had complicated treatment by means of lower voltage x-ray. The increased depth dose which results from the use of supervoltage radiation equipment greatly reduces the amount of radiations which must be delivered to intervening normal tissues between the skin surface and the tumor.

To overcome some of the problems of intensively delivered short course radiation therapy a number of people have tried split dose intensive radiation therapy. A number of institutions including the University of Oklahoma have begun to utilize a split course technique for some incurable carcinomas of the lung, upper air passages, head and neck. We have found that the delivery of an intensive dose of radiations, usually 2,000 rads in a period of five treatments is followed by rapid shrinking of the tumor with subsequent relief of pain and other symptomatology. The patient is allowed to return home for a period of three weeks. He then comes back for a second identical course of irradiation. It has been found that this technique gives results that are comparable to or better than the long term fractionation with a lower rate of patient morbidity. The full knowledge of the long term effects of this form of treatment are still incomplete and further carefully organized clinical trials are necessary.

#### THE OXYGEN EFFECT

Oxygen and more recently hyperbaric oxygen (100 per cent oxygen under one to three atmospheres of pressure) has been used as an adjuvant to radiation therapy. The oxygen tension in tumor and normal tissue has been proven to play an extremely important role in the overall tumor response system. The amount of ionizing radiations necessary to produce a given change in many biological systems is two to three times as

great with a moderate degree of anoxia as in the presence of oxygen. A number of very important points have been adequately demonstrated recently. Among these are the fact that oxygen must be present at the time of irradiation and the magnitude of oxygen effect varies with the amount of oxygen available. Available oxygen supplied to the cells is usually expressed in terms of partial pressures of oxygen.

The importance of oxygen in determining the level of radiosensitivity of tumor cells is universally accepted. It is also fairly well accepted that in most intact malignant tumors there are cells in the central portion of the tumor that are poorly oxygenated and in many cases quite anoxic. It is felt by many people that the relative radioreistance of these cells within the central portion of tumors is probably due to their relative anoxia. This could account for failure to completely eradicate all of a relatively large tumor, whereas a small tumor of the same general cell type may be totally eradicated. Apparently there is a decreasing gradient of oxygen tension between the periphery of a tumor, where an adequate vascular supply still exists, and the center of a tumor which is usually avascular and necrotic. A dose of radiations sufficient to kill the peripheral cells may not be adequate for the more resistant anoxic interior cells.

It has been felt by most investigators that the addition of oxygen either at atmospheric pressure or by hyperbaric means will decrease the ratio between oxygen saturation of normal tissue and the oxygen saturation of tumor tissue. The percentage increase in oxygen saturation is always much greater for the relatively anoxic tumor than for the already well oxygenated normal tissues. The

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## Therapy / BOGARDUS

administration of oxygen under hyperbaric conditions usually results in a further increase in oxygen saturation of the tumor tissues. One hundred per cent oxygen saturation of normal tissue results from breathing pure oxygen at atmospheric pressure and obviously no further oxygen tension increase of these cells may be accomplished by hyperbaric means. When the oxygen tension exceeds three atmospheres of pressure the oxygen is actually in physical solution in the plasma. It has been found experimentally that plasma transport of oxygen alone is sufficient at this pressure to meet normal tissue requirements.

Some disagreement exists among the proponents of the two systems (atmospheric pressure oxygen versus hyperbaric oxygen) as an adjunct to radiation therapy which has not been resolved at the time of this writing. There is agreement, however, that the addition of oxygen by either method during radiation therapy appears to enhance the tumor's response to radiations.

### CHEMOTHERAPY AS AN ADJUNCT TO RADIATION THERAPY

Chemotherapeutic agents have been used many years for the palliative treatment of cancer and more recently they have been used as an adjuvant to radiation therapy in both the palliative and curative management of cancer. Many of the earlier compounds used for the management of cancer were what is referred to as radiomimetic due to the fact that they had a great similarity to radiation in action and effect.

Many of the earlier chemotherapeutic agents such as nitrogen mustard and 5-fluorouracil are still quite useful but may be toxic when used in combination with radiation therapy. Often radiation therapy is used following a single dose of nitrogen mustard for some of the more acute problems which arise in the treatment of cancer. Nitrogen mustard is often used as the initial treatment in patients with superior vena caval obstruction, spinal cord compression and other similar emergencies where an immediate intense effect is desired.

In the treatment of retinoblastoma, the

combination of triethylenemelamine (TEM) with radiation therapy appears to offer an increased therapeutic advantage over either modality used singly. Recently the use of methotrexate with radiation therapy has proven of some value in palliation of head and neck tumors. The University of Oklahoma Medical Center in cooperation with the Oklahoma Medical Research Foundation is currently utilizing a regimen of methotrexate plus intensive split course radiation therapy for incurable tumors of the head and neck. It has been found that the combination of the two seems to give slightly better results than radiation therapy alone.

Currently methotrexate is being used in patients with very large tumors to achieve some regression of tumor size which is then followed by radiation therapy. The rationale behind this is that the large bulk of tumor often can be reduced in size by the use of methotrexate leaving a smaller mass of tumor to be irradiated finally. Due to the smaller mass, the tumor should be geometrically a more favorable lesion to treat with radiation therapy from the standpoints of field size, total tumor mass irradiated, and better oxygenation of the tumor. These studies are still too early to predict the overall effectiveness adequately, but preliminary results appear quite favorable.

The majority of far advanced neoplastic disease is relatively unaffected in its final progression by either chemotherapy or irradiation therapy used alone. Perhaps a combination of these methods in the future will prove a far more effective form of treatment both curative and palliatively for malignant disease.

### PREOPERATIVE RADIATION THERAPY

Preoperative radiation therapy has been tried many times in the past as an adjuvant to surgery. The rationale being that if the tumor may be decreased in size by the use of radiation therapy then the surgeon will be better able to completely encompass the tumor within his surgical field and thereby effect a better chance of total removal.

Initially most preoperative radiation therapy was given as a long-term routine fractionation high dosage treatment course with



maximum or near maximum amounts of radiations being delivered. A waiting period of six weeks was necessary for a reduction of the radiation reactions before surgery.

This form of treatment, although it may have resulted in some increase in cure rate, usually greatly complicated the surgery and later healing due to the reactions and fibrosis which followed a full course of conventional radiation therapy. For these and other reasons preoperative radiation therapy fell into considerable disfavor with surgeons and radiation therapists alike, and was, with the exception of a few cases, abandoned for many years.

In recent years a number of people have reconsidered the role of preoperative radiation therapy as an important adjunct to surgery. Since it was found that large doses of radiations may delay surgery, impair the healing process, or compromise the surgical field, considerable interest was developed in the effectiveness of small and intense doses of radiations followed immediately by surgery before the radiation reactions had a chance to occur.

The present theory behind the use of preoperative radiation therapy lies in the fact that intensive high dose irradiation can effectively destroy a large percentage of the viable cells within a given tumor population. Although this does not effect a cure of the tumor, it can decrease the tumor size and viability of the individual cells.

Preoperative irradiation has no place at all when the entire tumor and its extensions can be radically excised by surgical means, and is of little value when the tumor is widely disseminated. The chief benefit is derived in that group of patients in whom relatively localized remnants of tumor could conceivably remain following an adequate surgical procedure and for those cases in whom tumor cells are easily disseminated at the time of surgery.

One of the principal effects of preoperative irradiation is to inhibit the ability of tumor cells which may be disseminated at the time of surgery to grow.

Considerable reduction in size of the tumor usually takes place and sterilization of peripheral extensions quite often occurs. The peripheral extensions of any tumor are the most radiosensitive portions of the malignant growth, and these remnants which may not be removed at the time of surgery can be rendered inactive by irradiation.

There have been many recently reported articles documenting the fact that previously inoperable tumors were rendered operable and curable by the adjunct of radiation therapy.

Numerous carefully controlled studies are being done at the present time for preoperative irradiation of carcinoma of the colon, carcinoma of the bladder, carcinoma of the lung, carcinomas of the head and neck, carcinoma of the breast, as well as the currently accepted adenocarcinoma of the endometrium.

There are two conflicting views as to whether the radiation therapy should be delivered over a long term fractionated course with a waiting period of six weeks before surgery, or a short term high intensity rapid course with an immediate operation following the completion of radiation therapy. Both groups agree that irradiation preoperatively does increase the survival and cure rates without an appreciable increase in morbidity.

We are now awaiting statistical comparative results of study programs of several institutions aimed at settling these and other issues. The results should be available within the next two years and perhaps even sooner on a preliminary basis.

Extrapolating from the tremendous strides which have been made in the field of radiation therapy over the past 15 years as compared to the first 40 years after development, it should be possible within the next decade to see almost complete control of cancer by means of advanced techniques in radiation therapy used in combinations with surgery and drugs under the guidance of the radiobiology of the patient's own tumor. □

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# Reflections From an Orthoptist

*A Brief History of Orthoptics, Fixation Disparity, The Evil Eye*

VERENA JOSS

*The author wishes to assure the reader of "the evil eye" that the practice of Orthoptics is completely void of witchcraft or superstition, although there are times when these dark mysterious forces might come in handy.*

## A BRIEF HISTORY OF ORTHOPTICS

IN ITS BEGINNING orthoptics consisted merely of various forms of occlusion. Today this is a small (but important) part of our concept of orthoptics.

Historically one finds that orthoptics began in the seventh century. At that time a Greek physician, Paulus Aeginata, was credited with the invention of masks with perforations for each eye. He believed that strabismus and amblyopia could be cured in this manner. One century later an Arabian physician, Ali Ibu, at Abbas claimed that strabismus was caused by unequal contraction of the muscles. Hering's and Sherrington's laws of equal and reciprocal innervation may have had their origin at that time, at least in theory.

From the Section on Orthoptics, Department of Ophthalmology. The University of Oklahoma Medical Center, Oklahoma City, Oklahoma.

For several centuries following this, one cannot find evidence of any new discoveries or means of treatment. During the 17th century, however, the interest in strabismus seemed to be focused in France. De la Hire thought that squint rose from a defective retina and the eye deviated because the most sensitive part was not in line with the optic axis. Buffon claimed that it was due to weaker vision in the squinting eye and he advocated occlusion of the good eye. Apparently this is the first time occlusion had been used in this manner.

The 18th century brought the discovery of abnormal retinal correspondence by Johann Mueller. Shortly thereafter Donders established the relationship between accommodation and convergence and their role in strabismus. Javal, the father of orthoptics, demonstrated that one may recover single binocular vision by the use of the stereoscope, proving that squint is an anomaly of binocular vision. He also demonstrated the value of atropine in strabismus.

In 1839 the first muscle surgery, a myotomy, was performed by Dieffenbach. In 1903 Worth classified fusion into three grades and devised the amblyoscope. In 1919 Miss Mary Maddox started orthoptic work and in 1930 she established the first clinic at the Royal Westminster Hospital in London. Two years later Doctor LeGrand and Elizabeth Stark opened the first clinic in the United States at the 5th Avenue Hospital in New York.



Today we have the American Association of Orthoptists which provides for basic and practical training and examinations, and regulates the professional activities of the orthoptist.

#### FIXATION DISPARITY

Fixation disparity has received numerous names, such as "lag," "retinal slip" and the most recent one is "mono-fixational phoria." I prefer to call it fixation disparity because I was introduced to it as such. Also, I feel it describes the condition well.

Fixation disparity may be defined as a type of esophoria in which there is absence of bifoveal fixation. Although it has been stated that normal, binocular vision requires bifoveal fixation, in a case of fixation disparity one can demonstrate all three grades of fusion; yet, there is a slight disparity of fixation in one eye. It is revealed when the cover-uncover test is applied. On observation the patient may appear perfectly straight; however, on covering the dominant eye the opposite eye moves slightly laterally to assume foveal fixation. On removing the cover this eye reverts to a slightly convergent position with parafoveal fixation. Usually one finds a slight difference in visual acuity, but not more than one or two lines. Fusion is present with amplitudes, retinal correspondence is normal and stereopsis is present on the fly. Tests on the amblyoscope reveal no suppression.

Ogle reports that as long as the fixation axis of the nondominant eye remains within Panum's macular fusion area, diplopia will not result. He theorizes that fixation disparity develops in response to the strain of maintaining fusion in the presence of a significant heterophoria and may represent an adaptation to the phoria. This may be one explanation why these patients are not symptomatic. Literature also states that it occurs mainly in patients with low degrees of hyperopia and in cases in which surgery has been performed. However, we have also observed fixation disparity in high hyperopes following surgery, in whom there is a large, residual esophoria.

I feel that fixation disparity should not be interpreted as eccentric fixation, abnormal retinal correspondence, or a small angle

esotropia, because in these instances one cannot demonstrate third grade fusion under room conditions, and the findings on the amblyoscope will differ in that suppression will be reported.

In regard to orthoptic treatments, no matter how intensive we work with a fixation disparity, give antisuppression exercises, increase fusional amplitudes, etc., invariably this slight shift of the non-dominant eye persists and I have come to the conclusion that these patients do not greatly benefit from orthoptics.

#### THE EVIL EYE

Belief in the evil eye is the most ancient and the most universal of all superstitions. The belief that evil power can come out of the eyes to damage the mental and physical state of the victim was supported by the theory of vision evolved by the Greek philosophers, which stated that vision was a form of energy originating in the observer, so that visual rays were thrown out by the eye to strike an external object, and were then reflected back again. At all times the evil-eye was considered dangerous, but when the glance was cast obliquely its power was intensified, and it must be this fact that caused squints to be so abhorred.

The conception that the eye is of supreme importance is shown by many early examples. Ptah, the Egyptian father of gods and men, brought forth gods from his eyes, whereas men were brought forth from his mouth. The savage New Zealand warriors, on slaying a chief, gouged out the eyes and swallowed them. Since they believed divinity to be in the eyes, they thus not only killed the body but also possessed the soul of their enemy.

To bewitch, enchant, or exert the evil eye, or to fascinate, as the last came to be called, was the characteristic of witches and wizards who merited death at the stake.

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*Verena Joss, a native of Switzerland, received her training at Johns Hopkins Hospital and is a Certified Orthoptist. She has been with the Department of Orthoptics at the University of Oklahoma Medical Center for the past seven years.*



William Story described a typical fascinator as a lean man with a sallow complexion, who was morose and melancholy and who walked the streets alone because all men feared him. He was of squalid appearance and had an unpleasant odor about him. Most obvious of all, he had some peculiarity of the eyes, such as a squint, ptosis, exophthalmos, nystagmus, or an abnormality of the pupil.

In the Bible, as well as in mythology, there are many references to the evil eye. In Roman mythology Juno was notorious for her evil eye so that Mercury, the messenger, had to be protected on his errands with a special wand. On her death, Juno placed her eyes in a peacock's feathers and these forever bore the mark, and became the superstitious bringers of bad luck. The deadly power of the eyes of Medusa turned all she gazed at to stone and Perseus only succeeded in killing her by reflecting her own fatal glance upon herself. The story of Narcissus, who gazed so long at his own reflection in the water that he wasted away and became a flower that bears his name, is another example.

The fear of the evil eye was so great that many remedies were used as a form of protection. The most common one was spitting. Saliva was thought to represent a man's soul and therefore to spit in heathen times was to make an offer to the gods. It was also used in the cure of eye diseases. Charms played a large part in giving protection from the evil eye. Among these are items such as horns, the symbol of Diana the moon goddess, dwarfs, hunchbacks, or the head of Medusa. Their function was to act as lightning conductors and to attract the first glance of a fascinator which was always thought to be the most dangerous.

Gifford relates how in the 6th century St. Symeon Salos had his own individual method for curing eye disease. For young and pretty girls with cross-eyes he offered to kiss the eyes and was so successful with this

method that girls with eye afflictions ran after him to be kissed. The heavy veils still worn to some extent by Mohammedan women originally formed a protection against the evil eye. Children in China are nicknamed "dog" or "flea" by their parents to lessen the danger of receiving praise from strangers. In parts of India a boy's face remains unwashed until the age of six to deter any expression of admiration. In Persia a baby's head is covered in soot before it has been completely delivered.

Many superstitions still prevalent today had their origin in the belief in the evil eye. However, they are undoubtedly more common abroad than in this country. Lucky horseshoes, which are frequently hung on doorposts, owe their reputation to their crescent shape which was popular as a charm against the evil eye. Nelson, for instance, had a horseshoe nailed to the mast of the Victory. Many wedding customs afford protection from fascination; the bride is veiled from the dangerous staring of the crowd, and she is carried over the threshold of her new home because it is in the entrance to any building that demons are most active. The custom of blacking eyebrows and lid margins of women used to be a protection from the evil eye. At the present time a person so adorned seeks to enhance her own powers of fascination. The evil eye has left its mark on our everyday conversation. The jocular toast of "here's mud in your eye" can either mean a protection against fascination or it can mean a desire for good health, as clay had often been used in the cure of eye disease. The ability of any of us to "look daggers," to cast a withering glance, or to give "a dirty look" makes us all into potential fascinators. □

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# The Nutritional Factor in Atherosclerosis, A Model

HUMPHREY F. SASSOON, Ph.D.  
B. CONNOR JOHNSON, Ph.D.

*The evidence regarding primary causation of atherosclerosis contains anomalies which suggest a two-stage process in which lesions are secondary to metabolic changes. A framework is proposed which will accommodate nutritional and other suspected factors.*

**N**OBODY KNOWS what causes atherosclerosis. Statistics have led to suspicions, suspicions to descriptive studies, and descriptions to hopeful advice. Research has, indeed, led to useful discoveries but these nevertheless have failed to reduce the incidence of the disease. Every reader will know that to study a disease effectively it is first produced in laboratory animals, then one learns how it is produced, what are the key substances, how their effects or their absence can be counteracted, etc. Obviously this routine has gone wrong in the study of atherosclerosis. Are we waiting for the discovery of some fundamental biological mechanism, hitherto unsuspected? Or have researchers failed so far to ask the right questions, to design the right experiments, or to draw the right conclusions? In our opinion the total of observations on atherosclerosis available today is sufficient in quantity and quality to lead us to causation of the

disease, and therefore one or more leading clues must be locked up somewhere in those observations.

This notion diverted us from pursuing a comprehensive review of the data to an attempt to gain a fresh perspective over part of the field, based on the premise that any valid interpretation must account for the evidence, no matter how contradictory some of that evidence may seem. That attempt led to construction of a model hypothesis of primary causation, which is offered here in outline. Absolutely no claim is made that this is the only possible explanation of the data cited. Rather we hope to stimulate the reader who may be interested to think for himself, to question assumptions he may regard as basic, and perhaps personally to contribute to the recognition of one or more links in the chain of causation. The model hypothesis is offered untested; adequate testing would, of course, occupy many laboratories for a number of years. First let us briefly comment on the present state of knowledge.

## DIETARY FATS AND SERUM CHOLESTEROL

Research to date has shown that the feeding of fats, especially saturated fats, can lead rather quickly to lesions of artery walls in animals which are also fed excessive (toxic) quantities of cholesterol,<sup>32</sup> thiouracil or vitamin D<sup>78</sup>. Those lesions are histologically and histochemically similar to the lesions manifested in humans. The incidence of ischemic heart disease (IHD) in human populations has been statistically correlated with fat consumption, especially saturated

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fats, and with raised serum cholesterol levels.<sup>32</sup> Thus, people are used to accepting advice not to eat saturated fats or cholesterol-containing substances. For some reason vitamin D (ergosterol, 7-dehydrocholesterol) is generally ignored; in a sunny climate anyone who consumes a quart of "supermarket" milk a day receives approximately a double overdose.

However, these factors do not always lead to atherosclerosis. Eskimos, for example, eat a lot of fat and have (or used to have) little IHD, and the same is true of the Masai, an East African tribe that has been intensively studied by Mann and coworkers from Vanderbilt University, Tennessee.<sup>42</sup> Railwaymen at Udaipore, North India, eat ten times as much fat as a matched sample of railwaymen at Madras, South India, but the latter are 15 times more susceptible to IHD.<sup>41</sup> Raised serum cholesterol and IHD often do not run together in individuals,<sup>18</sup> and a low-fat diet has failed to protect IHD patients from a second infarction.<sup>4</sup> Laboratory animals differ in their susceptibility to the nutritional production of artery lesions: rabbits are highly susceptible but rats, with digestive and metabolic physiology much closer to that of man, are almost non-susceptible. Hogs, dogs and primates all have been claimed as good models,<sup>11</sup> but they are not sufficiently expendable for short-term work or for studies in which a large number of alternatives have to be explored. While the quantity and quality of data leave no doubt that dietary fats and raised serum cholesterol can contribute to the build-up of sclerotic lesions in artery walls, these substances have not been proved to be prime causes of such lesions, and this raises the question of whether the lesions themselves are primary damage or secondary to some other dysfunction.

#### SEX, STRESS AND EXERCISE

It used to be thought that women were less prone to IHD during their reproductive years, but Furman<sup>21</sup> has pointed out that this is not a necessary deduction from the incidence statistics; the degree of protection given by ovarian hormones seems to be

small at best. It has been maintained also that stress is a frequent factor in the lives of IHD patients;<sup>49</sup> this contention is difficult to criticize because there are so few facts. Stress happens to many people who do not develop IHD; further, what sort of stress? If one has in mind stresses which produce, for example, parasympathetic overactivity, then peptic ulcer patients should be specially prone to IHD, but we know of no evidence that they are. Later we shall suggest a rationale for hypertension as an accelerative influence in IHD, but we are unable to visualize a causative role for hypertension or for psychogenic stress, in any rationale for which we have seen evidence adduced. Similar reasoning also can be applied to the much debated subject of physical fitness. It is well known that bus drivers, who sit, are more prone to IHD than their conductors, who move around, and that telephone operators are more prone to IHD than linesmen.<sup>47</sup> The Masai, who eat fat and are free from IHD (see above) are famed for their physical fitness, and Mann, *et al.*,<sup>43</sup> have deduced that this is in their case a decisive protection. However, American athletes are among the world's fittest and the contrast between them and the general American population is one of the most striking (a well-known coach lately described a ball game as "twenty-two men in need of a rest and 40,000 in need of exercise"). Nevertheless, Montoye,<sup>46</sup> in a survey of American athletes, has found them to be slightly more prone to IHD than the general American population. It is clear that lack of exercise alone cannot be a primary factor in the causation of IHD. However, regular exercise does tend to reduce the levels of an enzyme, glucose-6-phosphate dehydrogenase in liver cells<sup>33</sup> of which the function will be described later.

#### DIETARY CARBOHYDRATES

A century and a half ago it was suggested that "apoplexy" came from eating too much new-fangled sugar.<sup>37</sup> In 1964 Yudkin<sup>50</sup> supported this with statistics indicating that in 41 nations fat consumption and IHD each rose in direct relation to sugar consumption (and therefore in indirect relation to each other). Further support has been provided



by studies at Tecumseh, Michigan,<sup>50</sup> in Connecticut,<sup>15</sup> in Yemenis repatriated to Israel,<sup>9</sup> and elsewhere.<sup>5</sup> Yudkin<sup>77</sup> and many others have drawn attention to the special susceptibility of diabetics to IHD, Epstein and co-workers<sup>50</sup> have widened this to glucose tolerance generally, and Streeten<sup>62</sup> and others<sup>8</sup> have animadverted to the reduced glucose tolerance in many old people who may be especially prone. Macdonald<sup>38-40</sup> has over some years been emphasizing the influence of dietary sucrose on serum cholesterol, even in athletes at exercise, and in our laboratory<sup>54</sup> we have produced a syndrome of changes in liver, blood and artery wall of rats by means of dietary sugars combined with dietary stress in the form of starvation and refeeding. Tepperman,<sup>14</sup> Potter,<sup>51</sup> Lardy,<sup>36</sup> Krebs,<sup>34, 35</sup> Chaikoff<sup>20</sup> and other leading biochemists have gone far toward elucidating the metabolic pathways by which dietary sugars are converted to lipids, including cholesterol, in liver, adipose tissue<sup>7</sup> and other organs; Johnson<sup>28</sup> has shown that these pathways are particularly active when excessive sugars are fed to starved rats<sup>58</sup> or hogs<sup>57</sup> and that myocardial function may then become grossly disordered.<sup>27</sup> Sucrose, fructose, glucose, starch appear to rank in that order for association with IHD,<sup>15, 37</sup> and also for degree of influence on metabolic pathways and on the pattern of blood lipids.<sup>2, 3, 30, 40, 68, 74</sup> Yet primitive peoples who consume mainly carbohydrates are not regarded as IHD-prone. Furthermore, experiments of this type have not yet succeeded in producing in the artery walls of animals the typical pathological lesions of atherosclerosis.

#### PRESENT POSITION

This may now be summed up as follows:

1) Statistics have linked IHD in human populations to dietary fats, to dietary sugars, to lack of exercise, to various life stresses, but it has not been possible to deduce any one rule applicable prospectively or retrospectively to all individuals (though some attempts appear valid in limited circumstances, *e.g.*, the Keys Equation<sup>32</sup> in North America).

2) Dietary fats can be made to produce lesions in some animals if assisted by toxic

doses of certain substances (cholesterol, etc.) but they fail to produce such lesions when eaten regularly by some human groups.

3) Dietary sugars are closely associated with types of metabolism (*e.g.*, lipogenesis) and dysfunction (*e.g.*, low glucose-tolerance, diabetes) which are known to confer IHD-proneness to man but have so far failed to produce lesions in animals.

4) The majority of IHD studies have concentrated on lesion production and on blood-borne substances found as deposits in lesions. For a disease commonly suspected to have a mainly nutritional origin, surprisingly few studies have been concerned with primary and intermediate metabolism of the suspected diets.

Thus we know a great deal about the course and mechanisms of lesion build-up and about interactions at this stage between artery wall and blood components, all of which are very interesting scientifically and as a basis for therapy of symptoms. This well-known area will not be reviewed here, as it seems to us not altogether relevant to the *primary* causation of IHD. If we suspect that a diet may be a primary cause of a disease we cannot prove this by reasoning merely from intake data to autopsy reports or even from intake data to blood data to autopsy reports. It is necessary to show that the offending dietary substances are

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ingested, absorbed, metabolized and that the metabolites are translocated in sufficient quantities at each step to produce the next step, and in sufficient quantities at the penultimate step to produce the observed changes in the diseased organs. On the other hand, the metabolism of butter or sugar in man is not similar to that of thiouracil in the rabbit, and only limited conclusions can be drawn from experiments involving the latter process. If the mere presence of certain lipids and sterols in the blood were injurious to the arterial intima, few of us would survive childhood; what causes the intima to break down so that these substances can form lesions? In studies hitherto on IHD the final stages have been minutely described and the early stages have not. Could that be one reason why the causation of this disease remains unknown?

There is not much evidence for the hypothesis which follows, and the only claim made is that it accommodates all the evidence that we know in the area covered. It is not the only possible explanation of that evidence, and it is not a final opinion but rather a temporary working model.

#### GENERAL HYPOTHESIS

The reader is asked to consider a sequence of five major postulates:

1. Let IHD be a two-stage disease process with a threshold between the two stages. Thus, excessive dietary fats would lead to build-up of lesions in artery walls which have undergone threshold amounts of chemical changes elicited by excessive dietary sugars. This is reasoned from statements (2) and (3) in our summary above.

2. The chemical changes will be produced by substances, abnormal in type or amount, which will have entered the artery tissue by way of the adventitial microcirculation.

3. The chemical changes will be generalized, either accumulative or degenerative, and will develop either gradually or in pulses, *e.g.*, connected with feeding times.

4. The threshold will be overcome local-

ly, wherever and whenever the total amount and duration of chemical changes are sufficient for any site of the artery wall to become irritated by local blood turbulence. The irritation will eventually produce an inflammatory response, *i.e.*, capillary proliferation toward the intima and attraction of lymph. The increased local circulation will augment the supply of offending substances in a vicious spiral, which will continue until the intima, deprived of adequate physical support, becomes permeable.

5. At this point a lesion will start to build up, and the endpoint of this, our second stage, will of course be an infarction. (Thrombogenesis is now considered to be a separate disease process,<sup>21</sup> which itself is known to occur in several stages.<sup>45</sup>)

There is some evidence for a mechanism of this type. In the Department of the Medical Examiner for New York, sclerotic lesions of the arteries have been shown<sup>65</sup> to originate usually where blood turbulence is greatest. Early capillary proliferation has been demonstrated histologically by Campbell<sup>6</sup> in swine, and this was accompanied by focal increases of alkaline phosphatase. Zemlenyi<sup>78</sup> has found similar increases of this enzyme in the aortas of atherogenically nourished rats, by quantitative analysis of homogenates, and such increases have been observed in our laboratory<sup>54</sup> in rats fed a 69 per cent sugar diet and additionally stressed by starvation and refeeding. It seems justifiable to interpret provisionally such increases of alkaline phosphatase level as signs of actual or impending capillary proliferation. Esterly and Bowley<sup>16</sup> have reported the presence of cells resembling monocytes in the intima and media near early lesion sites; they did not explain this finding, but it appears reasonable on the basis of inflammation.

This type of mechanism also offers a simple and logical explanation of individual and species variability in susceptibility to lesion development. The amount of chemical change constituting "threshold" would be determined by the capacity of individual artery tissues (a) metabolically to clear the offending substances introduced in the microcirculation, and (b) to adapt to chemical changes or, in other words, to resist structural pathogenesis. Such a threshold



would vary between species, between individuals and from time to time in any individual according to age and condition. The challenge offered the arteries by the metabolism of any particular diet would vary similarly among species and individuals; this will be apparent if one considers, for example, the many differences in digestive function between omnivores and strict herbivores. Another example would be differences in the relative amounts of metabolizable energy utilized by the skin, far greater in small laboratory animals like the rat than in man. Surplus energy intake is thought to be not unconnected with the incidence of IHD, and the rat is notoriously resistant to lesion development. If this concept is valid, then the rat could prove to be a good subject for investigation of the early (pre-threshold) stages of atherogenesis. A threshold of the type suggested also would provide a "home" for suspected IHD factors other than nutritional. For example, such a threshold would be raised by physical fitness and, perhaps, lowered by "stress." The role of hypertension would be three-fold: (a) the actual pressure increase would lower the threshold, (b) blood turbulence would be increased, and (c) capillary flow and the supply of initiating substances to the arterial tissue would be augmented. This concept would seem to reflect rather accurately the relative importance of hypertension, lack of fitness, stress and other such factors, as presented in the literature as a whole, but that of course is no guarantee of truth.

#### DETAILED MODEL FOR STAGE ONE

Here it is only possible to construct one example of how such a model might work, in order to point to potentially profitable areas for study. Some of these areas have been explored intensively, and the data are tantalizing because they were not produced with a view to atherosclerosis research and therefore do not contain controls which allow us to draw many firm conclusions in this direction. Let us continue our series of postulates.

6. Healthy artery walls are, by definition, minimally porous; lipids and cholesterol are normal blood components; something

therefore must happen to initiate permeability and deposition. Consider, then, that the cells become slightly engorged, from time, just enough to produce an inflammatory reaction after 10-20 years (in man) of several-times-daily challenge.

7. Let us select three substances for consideration: (a) lactic acid, (b) glycogen, and (c) cholesterol. In theory, all three could be caused to accumulate in arterial tissue by simple increases of blood glucose level, *e.g.*, reduced glucose tolerance such as is being increasingly associated with the incidence of IHD in the Tecumseh, Michigan, long-term study.<sup>50</sup> (a) Accumulations of lactic acid have been produced in swine arteries by experimental hypertension<sup>60, 61</sup> and in rats by feeding a high sugar diet together with starvation-refeeding stress;<sup>54</sup> decreases of lactic dehydrogenase (which catalyses metabolism of lactic acid) have been produced in heart muscle by adding glucose to a perfusion medium.<sup>67</sup> Conversely, physical exercise facilitates the general clearance of lactic acid from the tissues.<sup>43</sup> (b) Glycogen accumulations have not been reported but might be expected, since some glycogen storage diseases are known to progress to cardiovascular fibroelastosis.<sup>14</sup> Decreased levels of the enzyme glucose-6-phosphate dehydrogenase (G6PDH) are characteristic of early lesion areas of human, hog and rat artery muscle,<sup>55</sup> and such decreases have been produced in apparently healthy aortas of rats by the sugar and stress treatment already mentioned.<sup>54</sup> Normal levels of G6PDH appear, from studies in other tissues, to depend largely on the supply of glucose-6-phosphate (G6P) derived mainly from glycogen breakdown;<sup>19, 44</sup> thus, if the glucose supply goes up and the G6PDH level goes down, one may reasonably look for increased storage of glycogen. Another possible avenue of glucose disposal would be increased lipogenesis by an alternative pathway, (*e.g.*, Embden-Meyerhof)<sup>64</sup> but this ordinarily requires an increased supply of reduced nucleotide cofactors and these are normally supplied by increased activity of the pentose pathway. G6PDH is the rate-limiting enzyme for the pentose pathway, and increased G6PDH activity normally reflects increased synthesis of the enzyme,<sup>28, 51</sup> but we find less. Furthermore, if part of an



increased supply of glucose were rapidly metabolized to fatty acids by an alternative pathway, this could result in both inhibition of G6PDH<sup>69</sup> and stimulation of glycogen synthesis.<sup>68, 72</sup> Rubinstein and Haimovici<sup>53</sup> have reported decrease of glycolysis as an early aortic change. Thus, there are several grounds on which to expect at least minor increases in glycogen storage; conversely, estrogen is reported<sup>60</sup> to enhance glycolysis in artery walls, which could represent a very small degree of protection for females in their reproductive period. (c) Cholesterol has been reported<sup>71</sup> to crystallize out of human serum in the laboratory, at rates directly proportional to the glucose content. If this were to reflect a mechanism for primary deposition which could merely be potentiated by increases of cholesterol level at this stage, it would be a very interesting finding; however, we have not seen reports of adequate *in vivo* studies.

Let us now consider the production of blood glucose increases, apart from those directly resulting from diabetes (of which the association with IHD is fully accepted). This is an area currently under intensive study. It is well known that excessive intakes of carbohydrates are rapidly metabolized to fats which tend to be deposited as adipose tissue provided the total caloric intake is also excessive, and also that if this goes on for too long, glucose tolerance can be diminished. These reactions take place mainly in the liver, but also in the "protein fraction" of adipose tissue.<sup>7</sup> They are catalyzed by enzymes, some of which are normally present at low levels and increased by rapid synthesis "on demand"; these are described as "rate-limiting" enzymes and include G6PDH<sup>28</sup> (described above), pyruvate kinase,<sup>34, 35</sup> and a number of other enzymes.<sup>20, 36, 64</sup> Enzymes are proteins, and it now appears probable that the immediate stimulus for the synthesis of increases of G6PDH consists of the presence of its substrate in sufficient concentration for long enough to enable molecules of it to bind to an appropriate site in either the genetic or the ribosomal part of the apparatus for building the protein out of amino acids (data to be published). Each molecule of

substrate will then "induce" synthesis of one molecule or enzyme, or the proportions may be different. Many other proteins are being made all the time inside liver cells, and G6PDH, for example, does not seem to enjoy a high priority rating; it is made only in the presence of an ample supply of amino acids derived from the diet.<sup>1, 44</sup> Another requirement for synthesis of these and other proteins is an adequate supply of adrenocortical and other hormones, and also, of course, the precursor of the substrate must be able to enter the cell. Glucose utilizes insulin for this purpose,<sup>75</sup> both in muscle, in adipose tissue and elsewhere. Some investigators consider that insulin<sup>70</sup> and/or adrenocortical hormones<sup>31</sup> have a more specific role in the synthesis of particular enzyme proteins, others including Tata<sup>63</sup> deny this; but our studies<sup>29, 56</sup> on G6PDH indicate that synthesis of all except perhaps minimal levels of this enzyme (such as found in a starved animal) occurs as described above. In relation to any particular carbohydrate the amounts of increase of these enzymes above basal levels are proportional to the amounts of that carbohydrate ingested,<sup>29, 56</sup> but increases also can be produced in two other ways if the diet contains carbohydrate: (a) large transient increases are produced in animals refed after a period of starvation<sup>28, 52</sup> and (b) smaller but significant increases are produced and maintained by disturbance of customary feeding times.<sup>52, 56</sup> These increases appear to be made possible by effects of these stresses on the insulin regulating mechanism<sup>66</sup> and on the pool of available amino acids.<sup>36</sup> The importance of G6P as a key point in energy metabolism is shown by the number and complexity of alternative pathways leading to and from it. Disturbance of G6P metabolism has been proposed as the origin of a number of diseases.<sup>26</sup> Our studies have given us the impression that in the intact animal the pentose pathway functions mainly as an "overflow" for metabolism of large excesses of energy from simple carbohydrates accompanying ample protein intake.

From such studies by our team and others the following considerations relevant to our model hypothesis for primary causation of "stage one" atherogenesis emerge:

(a) Excessive sugar intakes must lead



to direct transient rises of the blood glucose level which are at first counteracted by increased synthesis of the rate-limiting enzymes for "overflow" metabolic pathways according to the adequacy of the accompanying protein intake. With deposition of adipose tissue comes an increase in the number of cells participating in these lipogenic reactions and thus utilizing insulin to admit glucose from the blood. This raises the overall *potential* rates of lipogenesis and of blood glucose clearance. Synthesis of insulin is regulated positively by blood glucose level and negatively by factors connected with blood insulin level; however, beta-cell capacity for insulinogenesis is finite. Here is material for a possible cause of diabetes mellitus. Lack of dietary protein will to some extent protect<sup>23</sup> the beta-cell mechanism.

(b) The "overflow" pathways are not, of course, the only systems for lipogenesis from carbohydrate; people get fat on rice or manioc alone. Dietary protein provides the raw material for the "overflow" pathways to develop and function. Statistically<sup>76</sup> the alarming rise in deaths from IHD has occurred in populations taking ample protein with their excessive carbohydrates.

(c) In the active presence of these "overflow" pathways, cells in the liver and adipose tissue can accept glucose more rapidly from the blood, as we have seen. One may speculate that the reduced glucose tolerance of old people who are not insulin deficient<sup>8</sup> may simply reflect their diminishing capacity for protein synthesis. Such diminishing capacity must tend to reduce potential glucose tolerance at any time.

(d) Data from experiments in which either the capacity for protein synthesis or the economy of the amino acid pool has been disturbed (and this includes most forms of surgical preparation of animals) should be viewed with extreme caution in this area.

(e) Dietary fats, which are absorbed from the intestine into the lymphatics rather than into the portal blood, should not<sup>17</sup> and, in our studies,<sup>29, 56</sup> do not influence the metabolism we have been discussing. In postulate (1) we proposed that their direct influence would start at stage two, after threshold amounts of chemical changes had been produced in the artery wall. We can

now be more precise and propose that lipids from dietary fat first enter the artery wall with lymph that is attracted to our site of inflammation (postulate 4).

This concludes our argument-in-chief. There are two matters of secondary importance to discuss briefly. The first concerns the reported differences between major types of carbohydrates; as mentioned earlier, sucrose, fructose, glucose and starch have been ranked usually in that order as potential promoters both of IHD<sup>5, 15</sup> and of serum cholesterol and triglyceride increases.<sup>3, 24, 30, 40, 48</sup> The same ranking seems also to apply to their respective efficacy at promoting increases of G6PDH and analogous enzymes in liver.<sup>2, 20, 28, 35</sup> One possible explanation may be: fructose is absorbed more slowly from the intestine than glucose but enters the liver cells more rapidly (insulin is not used)<sup>48</sup> and, once there, is converted enzymatically to glucose-1-phosphate more rapidly than is glucose. This could enhance glycogen synthesis from fructose in the presence of equal amounts of glucose when both are derived from hydrolysis of sucrose, a process now known to occur mainly in the duodenal mucosal cells.<sup>13</sup> Preferential uptake and utilization of fructose by the liver cell would have the effect of temporarily excluding part of the available glucose, even in the presence of adequate insulin; this would be reflected by delay in blood glucose clearance, and thus could justify the use by Crossley and others of the term "sucrose tolerance."<sup>12</sup> Rises of pyruvate kinase and some other enzymes have been graded according to the fructose content of carbohydrate-containing diets.<sup>2</sup> With regard to serum cholesterol increases, isotope dilution studies<sup>73</sup> reportedly indicate that about 80 per cent originate in the intestinal wall (by absorption or synthesis); here the pentose pathway, for example, is active and is not, apparently, markedly decreased during starvation,<sup>59</sup> when serum cholesterol is known to rise.<sup>25, 54</sup> If eventually a chain of causation be established between dietary sugars and IHD, a study of metabolic differences between sugars will be required in order to provide a rational basis for dietary advice.

Second, a major component of typical "executive" stress consists of hurried and irregular mealtimes, and such executives are



probably among those most liable to IHD. As we have seen, animals subjected to this type of mealtime stress have elevated levels of "overflow" enzyme pathways of carbohydrate metabolism,<sup>52, 56</sup> and in one study such animals were reported to show increased physical activity.<sup>52</sup> It is easy to see how this could be relevant to our model hypothesis, but it is difficult to design further meaningful experiments before this or some other model is established in considerable detail.

# CONCLUSIONS

The evidence we have discussed suggests that nutrition is the major factor in atherogenesis and that other factors are ancillary. This conclusion results partly from our selection of evidence, and we must straightway admit that the model we have proposed is highly selective and oversimplified. Nevertheless, in preparation for this review and for our own studies we have selected the evidence that seemed to us to be most significant to an inquiry regarding primary causation. At the least it seems likely that the balance and timing of the factors we have discussed may contribute to the course of the disease. Most people consider IHD to be a disease which is the property of senior citizens and which is now most unfairly extending its age-range. The mechanisms we have proposed indicate that, as suggested lately by Heald, *et al.*,<sup>22</sup> and as implied by the classical experiments of Hoelzel, of McCay and of Nikitin,<sup>10</sup> the foundations of IHD may be laid during childhood and particularly by chronic overnutrition with a combination of protein, carbohydrate and excessive vitamin D. Our grandfathers tended to be gluttons who kept their children on short commons until puberty; they did this out of benevolent prudence, and they may yet be justified.

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## ABSTRACTS

### IATROGENIC SEXUAL DISTURBANCES

This article appears in a new journal, "Medical Aspects of Human Sexuality," a field which some have termed, "the most neglected aspect of medical education" and a field in which a tremendous educational gap exists.

The author introduces his subject with the statement that the general public does recognize that sexual molestation of the child, regardless of its superficiality, may produce severe psychic trauma in the child. However, very little consideration has been given to the psychic trauma produced in the child by medical examination or surgical manipulation of the child's genital area. Doctor Mathis discusses many interesting cases arising from childhood examinations and treatments that had been regarded by the child as sexual assaults and had added to the adult psychological pathology. He discusses the iatrogenic aspects of surgery in both childhood and even adulthood if the physician fails to recognize the potential problem and prepare the patient and close relatives properly. He ranks the lack of a positive approach toward normal sexual physiology as number one among physician-induced ambiguities.

**Reviewer's note:** This article is highly recommended for perusal and thought. Other articles in this introductory issue also were quite interesting and covered such topics as, "Recently Exploded Sexual Myths," roundtable discussion on "Moral Aspects of Sex Counseling by Physicians," "The Menopausal Woman and Sex Hormones," and an interview with Doctor William H. Masters.—*Carman E. Bloedow, M.D.*

Iatrogenic Sexual Disturbances, Mathis, J. L., *Medical Aspects of Human Sexuality*, 1(1): 49-51, 1967.

### ISOLATED LACTASE DEFICIENCY

This condition as a cause of milk intolerance and diarrhea was noted and studied in postgastrectomy patients by these authors in 1966. In this article, they report on differences found between subjects with normal lactase activity (NLA) and with isolated lactase deficiency (ILD) using oral carbohydrate tolerance tests, small intestine biopsies and enzyme determinations, and urine determinations of lactose.

NLA patients had a blood glucose rise over fasting of 24 mgm per cent or more when given an oral lactose tolerance test, and an enzyme assay for lactase of one unit/gm wet weight of intestinal mucosa.

ILD patients had a blood glucose rise over fasting of 0-21 mgm per cent when given an oral lactose tolerance test and lactase activity of less than one unit/gm wet weight. Following the glucose-galactose tolerance test, they had a normal blood glucose rise confirming a normal absorptive capacity of the small bowel. There was

no difference between the NLA and ILD patients in the degree of lactosuria.

On the basis of their studies persons may be grouped as follows: 1. those tolerating milk and with NLA, 2. those with symptoms on drinking milk but with NLA, 3. those with no history of milk intolerance but with ILD, and 4. symptomatic individuals with ILD.

The symptoms of ILD result from the amount of lactose ingested, the rapidity with which lactose enters the intestine and total intestinal lactose activity. A previously asymptomatic ILD patient may become symptomatic when he develops GI disease for several reasons: 1. increased lactose loads in some diets, 2. rate of gastric emptying increased after gastric resection (may be 25 x greater), 3. inflammatory or functional intestinal disease symptoms may be increased with an ILD.

The etiology of ILD in adults is still unclear—whether congenital or acquired. Once a patient with ILD has developed symptoms of milk intolerance, he continues to become symptomatic when challenged with lactose.

**Reviewer's note:** This is a very good article by some of the leading workers in this area.—*Carman E. Bloedow, M.D.*

Isolated Lactase Deficiency: Correlation of Laboratory Studies and Clinical Data. Welsh, J. D. and Rohrer, V., Oklahoma City; Knudsen, K. B., USAF (MC), Lackland Air Force Base, Texas; and Paustian, F. F., Omaha. *Arch. Intern. Med.* 120: 261-269, 1967.

### RECENT PUBLICATIONS

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Microcirculation in the inner ear of the guinea pig: An impedance plethysmographic study. Suga, F. and Snow, J. B., Jr. *Physiologist*, 10:(3) 319, 1967. □



# Books As Clinical Tools

## CLINICAL REFERENCES IN PEDIATRIC NEUROLOGY

E. D. THOMAS, M.D.

Pediatric neurology as a discipline is concerned with a broad range of disease processes of the nervous system and muscles involving infants, children and adolescents, but perhaps its most unique aspect is its fundamental concern with development—both normal and abnormal. Development affects virtually all the disorders which involve the nervous system of infants and children. Furthermore, there is a relatively large number of neurologic syndromes which are peculiar to childhood and are rarely seen in adult life. The neurologic evaluation of infants and children cannot be a stereotyped procedure, but must vary with the conditions existing at the time of examination and with the age and other characteristics of the child.

Some of the textbooks of pediatric neurology include chapters on history taking and the neurologic examination of infants and children. *Pediatric Neurology*<sup>1</sup> edited by Farmer and *Neurology of Infancy*<sup>2</sup> by Dekaban include chapters on the neurologic examination. Other books dealing with various aspects of the neurologic examination include "Neurologic Examination of Children" by Paine<sup>3</sup> published in *Clinics in Developmental Medicine* as is "An Introduction to Developmental Assessment in the First Year" by Illingsworth.<sup>4</sup> *Cerebral Function in Infancy and Childhood*<sup>5</sup> by Peiper is an excellent reference for information on development and maturation of many basic functions such as position and movement,

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respiration, and reflexes of clinical significance.

The previously mentioned texts by Farmer and Dekaban serve as readable, day-to-day references for information on disease processes, but Ford's *Diseases of the Nervous System in Infancy, Childhood and Adolescence*<sup>6</sup> still serves as the basic and most comprehensive reference text.

Seizure disorders constitute an important segment of pediatric neurology practice. *Living with Epileptic Seizures*<sup>7</sup> and *Drug Therapy for Epilepsy*<sup>8</sup> both by Livingston provide practical review of classification and treatment of seizure disorders. *Epilepsy and the Law*<sup>9</sup> by Barrow and Fabing discusses various state laws pertaining to epileptics.

*Neurosurgery of Infancy and Childhood*<sup>10</sup> (Ingraham and Matson), *Pediatric Neurosurgery*<sup>11</sup> (Jackson and Thompson), *Intraspinal Tumors of Childhood*<sup>12</sup> (Rand and Rand) and *Diseases of Muscle*<sup>13</sup> (Adams, Denny-Brown and Pearson) serve as useful references for the particular areas suggested by their titles. □

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## Coronary Care Units

GERALD L. HONICK, M.D.

THE MORTALITY from coronary heart disease in this country exceeds half a million a year, making it the greatest single cause of death.<sup>1</sup> Most deaths result from cardiac arrhythmia, shock, or failure. Experience has shown that if patients with myocardial infarction have constant electrocardiographic monitoring potential lethal cardiac arrhythmias can be promptly and effectively treated. Thus, the coronary care unit came into existence. The key to the successful operation of a coronary care unit is staffing the unit with a group of specially motivated, trained and dedicated nurses. The nurse is frequently the first professional person to recognize and initiate treatment for arrhythmia or cardiac arrest. This new role of responsibility given to nurses in coronary care units requires special training for them to function properly. Instruction should encompass at least the following: 1. Instruction in anatomy, physiology and pathology related to coronary heart disease; 2. Clinical features and complications of acute myocardial infarction; 3. Electrocardiographic recognition of cardiac arrhythmias; 4. Fundamentals, operation and limitation of electronic equipment; 5. Special care of patients in coronary care units; 6.

Principles and practice of cardiac resuscitation including defibrillation.<sup>2</sup> After the unit is in operation a program of continuing education should be instituted to stimulate interest and continued enthusiasm in the unit.

Often suggested designs of coronary care units show the nurse always able to visualize the patient.<sup>2</sup> Our experience indicates that constant visualization of the patient is unnecessary if his electrocardiogram is displayed on an oscilloscope and a rate meter at the nurses' station. Patients appreciate being in private rooms with windows, in a tranquil atmosphere where the room can be darkened at night rather than being in a large ward constantly under the supervision of nurses. The room should have adequate electrical circuits with proper grounding. All equipment should be checked for electric shock hazards, because currents as low as 180 microamperes can fibrillate the human heart.<sup>1</sup>

There are many excellent monitoring devices available and selection should be guided by reliability, simplicity, and flexibility, but most important of all is the availability of satisfactory service. Too often hospitals planning coronary care units place too much



emphasis on physical design and monitoring equipment rather than obtaining an effective dedicated staff for the unit. The system of monitoring is only as valuable as the nurses using the equipment make it and its success depends on their competence and vigilance. Effectiveness of treatment is directly related to the promptness with which resuscitative measures are instituted and cardiac arrest reversed. In other words, excellence of physical setup or superb performance of modern electronic equipment cannot substitute or replace human competence.<sup>2</sup>

Originally, the coronary care units were resuscitation centers, but now they are aimed at prevention of lethal arrhythmias and early detection of power failure (shock and congestive failure). Primary cardiac arrest is less frequent if antiarrhythmic drugs are administered to patients with cardiac irritability. The nurse should be authorized to give a 50-75 mg bolus of Lidocaine by an infusion of one to four mgs per minute to control irritability. The inadequate cardiac output of sinus bradycardia and AV block should be treated promptly with atropine, Isuprel, or a temporary transvenous demand pacemaker. Lown thinks that primary cardiac arrest is uncommon if prompt, effective treatment is given to the early warning signs and symptoms. If ventricular fibrillation occurs the nurse should be authorized to deliver the counter shock immediately. Existing coronary care units have shown that the mortality rate from acute myocardial infarction has been reduced from 30 per cent to 20 per cent by this management.<sup>1</sup>

Although the mortality rate from primary electrical failure (especially ventricular

fibrillation) can be reduced, the mortality rate from power failure (congestive failure and shock) is still 60 to 85 per cent and has not been reduced by coronary care units.<sup>1</sup> Power failure is presently being investigated extensively at selected centers. In the meantime clinicians must detect early and treat aggressively the subtle signs of tachycardia, gallop rhythm, râles, mild distension of neck veins and radiologic evidence of pulmonary capillary congestion and cardiomegaly.

Doctor Corday recently stated that one-half of the people dying from myocardial infarction do so within the first hour and thus 250,000 die each year outside the hospital.<sup>1</sup> Efforts are being made to establish "pre-coronary care" by taking the coronary care concept to the home. Trained personnel would go with the ambulance to the home, rapidly assess the clinical state, determine the rhythm by electrocardiogram, administer such drugs as seem indicated and if necessary defibrillate the patient with a portable battery-operated defibrillator. Patients could be attached to a portable resuscitator giving closed chest massage and ventilation while traveling in the ambulance to the hospital.

Doctor Lown has referred to the coronary care concept as the most important contribution to medicine of this decade. The success of the unit in any hospital depends on the group of highly dedicated specially motivated and well trained nurses and physicians who maintain enthusiasm toward the coronary care concept. □

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### MED SCHOOLS ACCEPT FIFTY PER CENT

In the 1966-67 academic year, there were 18,250 applicants for the nation's medical schools and 9,123 were accepted. Students averaged applying to about five schools each.



## "Doctor of the Day" Program Underway

The "Doctor of the Day" program for the Oklahoma State Legislature is being sponsored again this year by the OSMA. This will mark the third year this project has been undertaken by the association.

The project provides a licensed medical doctor to be on-call in the State Capitol Building during the time the House of Representatives and the State Senate are in session.

A fully equipped First Aid Station, located between the chambers of the two legislative bodies, is provided for the doctor. A registered nurse will be assigned to the station each day to assist the doctor. The nurses schedule is being arranged by the Oklahoma State Nurses Association.

C. Riley Strong, M.D., El Reno, is the OSMA coordinator of the "Doctor of the Day" program and has requested that any physician interested in participating in the program contact the OSMA executive office.

The president of the OSMA is traditionally the "Doctor of the Day" on the opening day of each legislative session. Maxwell A. Johnson, M.D., current OSMA President, stated, "I feel that the 'Doctor of the Day' program is one of the most important and beneficial that our association members can participate in. The legislators have often expressed their appreciation of the service. In addition to this public relations benefit it also enhances our profession's lobby efforts and it gives the individual doctor an opportunity to observe the legislature in operation."

In May of 1967 during the closing days of the first session of the Thirty-First Legislature, a concurrent resolution was introduced into the House and Senate commending the Oklahoma State Medical Association for its services to the medical profession, to the people of Oklahoma, and

to the Oklahoma Legislature. This resolution was authored by all members of the House of Representatives and all members of the Oklahoma State Senate. The resolution was adopted by the House of Representatives and by the State Senate on May 11, 1967, and was duly entered in the official records of the State of Oklahoma.

In appreciation of a physician serving as "Doctor of the Day," he is introduced on the floor of the House of Representatives and the State Senate and is one of the few people allowed on the chamber floor while the legislative bodies are in session.

The equipment and supplies used in the First Aid Station are donated free of charge by various companies and organizations in Oklahoma. Contributors include Dulaney's Manufacturing Company, Brawley Rents, Inc., Oklahoma Physicians Supply, Melton and Company, Connie's Prescription Shops, and almost all of the major pharmaceutical companies.

The response of the pharmaceutical companies has been so great that the station's drug supply is most

complete. After reviewing the contents of the drug cabinet, one physician commented, "With what we have on hand, I think we could treat just about any ailment that the human body is capable of having."

The physicians participating in the program during January include Maxwell A. Johnson, M.D., Tulsa; Malcolm Mollison, M.D., Altus; C. Riley Strong, M.D., El Reno; G. B. Gathers, Jr., M.D., Stillwater; Scott Hendren, M.D., Oklahoma City; Norman Cotner, M.D., Grove; Harlan Thomas, M.D., Tulsa; James F. Hammarsten, M.D., Oklahoma City; H. L. Ratliff, M.D., Pawnee; H. E. Denyer, M.D., Bartlesville; Orange M. Welborn, M.D., Ada; Roger Reid, M.D., Ardmore; Paul J. Ottis, M.D., Okarche; Ralph E. Payne, M.D., Edmond; B. J. Cordonnier, M.D., Enid; John M. Kalbfleisch, M.D., Oklahoma City; William P. Jolly, M.D., Lawton; and Charles F. Paramore, M.D., Shawnee.

If each physician serves only one day as "Doctor of the Day" during the legislative session, approximately 100 physicians will be involved again this year. □



Doctor C. Riley Strong, OSMA coordinator of the "Doctor of the Day" project, and Nurse Mary Jane Martin, Norman, prepare to check State Senate President Pro Tempore Clem McSpadden's blood pressure and temperature before he goes into the legislative session.



## Contract Awarded For Rural Community Health Center

A \$385,469 contract has been awarded for construction of the first rural community health center planned under the University of Oklahoma Medical Center's Project Responsibility, Doctor Thomas C. Points, coordinator, announced.

Project Responsibility is a program aimed at easing the shortage of health workers in rural areas and one facet is the development of health centers to demonstrate how health services can be "packaged and delivered" to medical have-not communities.

Initial facility will be the Wakita Community Health Center, located in the town of Wakita (population, approximately 450) in north central Oklahoma.

Residents of the Wakita area raised money through solicitations and stock sales to finance construction and assist with the beginning costs of operation.

The contract was let by the Wakita Public Works Authority, a public trust established by the citizens of Wakita, to Charles M. Dunning Construction Co., Oklahoma City. The expected completion date is August 1st.

A combination clinic-hospital-nursing home, the Wakita Community Health Center will contain seven beds for acute cases, 11 for extended care and 30 for nursing home patients. There will be office space for three physicians, a public health nurse, social worker and physical therapist. Six examining rooms, a teaching-conference room, and laboratory and x-ray areas also are in the blueprints.

The building site is a six-acre tract donated to the project. An aircraft landing strip, also financed by the people of Wakita, will make it possible to fly the acutely ill to major medical centers and also will facilitate the travel of physicians taking part in the program.

The center will be staffed by a general practitioner, an internist and a pediatrician, who will hold teach-

ing appointments at the OU School of Medicine and participate in OU's new Family Medicine teaching program. Family Medicine residents will receive a part of their training at Wakita.

In mapping the Project Responsibility plan, Doctor James L. Dennis, OU vice president for Medical Center affairs, reasoned that overwork, loneliness and isolation from professional colleagues, educational and cultural activities are major deterrents to recruiting young physicians for rural practice.

He hopes to overcome this obstacle by appointing a three-physician staff, plus residents, who can spell each other and by assigning teaching consultants from the full-time Medical Center staff in Oklahoma City for periodic visits to Wakita and in turn, bringing the clinic doctors to the Medical Center. □

## Comprehensive Health Planning Program Explained in Newsletter

The Oklahoma Health Planning Agency has published a newsletter explaining the Comprehensive Health Planning Program for Oklahoma. In the newsletter, Jack V. Boyd, director of the planning agency, outlines the agency's departmental organization and its responsibilities.

The agency was organized under Public Law 89-749, known as the "Partnership for Health Act," which was signed into law in 1966. This act authorized grants to states for comprehensive health planning.

Governor Dewey Bartlett, in order to make Oklahoma eligible to receive health planning grants, created the state health planning agency in August of 1967 and assigned it to the Division of the Budget. The agency is financed by grants-in-aid from the U.S. Public Health Service through fiscal year 1970.

Two groups have been designated to advise the agency. These are the "Interdepartmental Committee on Health" and the "State Health Council." All members of each committee are selected by the governor.

The members of the Interdepartmental Committee on Health include

the governor, as chairman, and the state commissioner of health, Doctor A. B. Colyar, as vice-chairman, and representatives from eight other state agencies that are concerned with the public health and welfare.

The State Health Council will consist of 30 members to serve one, two and three year terms. They will be appointed by the governor and the members must include: (1) Representatives of official state agencies concerned with health services; (2) representatives of official local agencies concerned with health services; (3) representatives of nongovernmental groups concerned with health services in the state; (4) consumer representatives whose major occupation is neither the administration of health activities nor the performance of health services. A majority of the council must be consumer representatives.

The members of the second advisory group will be named in the near future. Persons suggested by various state groups have been contacted to ascertain their interest in serving in such a capacity.

According to Director Boyd, the agency's first official function will be to arrive at a "plan for planning." He stated it was necessary for the agency to devise a workable process for continuous statewide health planning. This plan for planning must be flexible enough to compensate for the changing health needs of the state.

Boyd pointed out that flexibility was a most important part of the planning process. If the agency is able to carry out the purposes of Public Law 89-749, the health needs of the state will be changing more drastically and more rapidly than they have in the past.

While the agency and its advisory committees will be constantly developing a comprehensive health plan, it will also be implementing health projects to alleviate shortages. Boyd explained that each time a project is implemented, the overall state plan will change. Areas that originally had been of lesser concern will gain in importance as the more critical problems are alleviated.



Provision is made under various sections of the act to provide grants to study local health problems and then to provide additional grants to implement the solutions to these problems. Grants will also be made available to state health and mental health authorities to assist in establishing and maintaining adequate public health services, including training of personnel.

Boyd said that the agency intends to use a system of task forces to assist the two advisory committees in evaluating the total health picture in Oklahoma. He foresees that the first task force will be created to develop an information gathering system to make maximum use of information that is available on health care in Oklahoma.

A second task force will probably be used to establish planning areas within the state. Using sociological, economic, health care facility, health manpower, transportation, and other factors, the task force will attempt to delineate these planning areas along rational lines.

In the future he sees task forces to study "long range probabilities" of changing health pattern, health economics, public information, and any other areas that may become of interest to the agency.

The task forces will be made up of persons with knowledge and experience in the area or on the subject of study.

Public Law 89-749 cannot and does not give the health planning agency the power to enforce any plan it might arrive at. The implementation of such plan must therefore be on a voluntary basis by the health agencies concerned. The agency will encourage cooperative efforts among governmental and nongovernmental agencies, organizations and groups concerned with health services, facilities or manpower and between such health agencies and groups in the fields of education, welfare and rehabilitation.

The agency does not supplant exclusive or specialized planning in the health field, such as The Region-

al Medical Program, Hill-Burton Program, Mental Retardation, Vocational Rehabilitation, or any other program of these types. Nor does it replace operational planning by health and welfare agencies.

Boyd stated that the agency's purpose will be to ultimately arrive at a comprehensive but variable state plan covering the environmental, mental and physical health needs of the entire state population. It will include formulas for arriving at the physical facilities, services and manpower necessary to meet the needs of the state. □

## "The Whole Man . . . " To Be Discussed by Physicians and Clergymen

Two outstanding speakers are slated to appear for a special statewide conference on medicine and religion being planned by the OSMA Medicine and Religion Committee. The Reverend Doctor Paul B. McCleave, AMA Medicine and Religion Program Director, and Doctor David Belgum, Ph.D., of the University of Iowa College of Medicine will discuss the conference topic, "The Whole Man in The World of Changing Morals."

The two-day meeting will be held February 2nd-3rd in the St. Francis Center for Christian Renewal in Oklahoma City. The OSMA is co-operating with the Oklahoma Council of Churches to prepare for the meeting.

Doctor Edward K. Norfleet, OSMA Medicine and Religion Committee Chairman, has extended an invitation to all Oklahoma physicians and clergymen to attend this special conference. Doctor Norfleet said, "We are finding that the spheres of interest of the physicians and the clergymen are overlapping more and more often. Medical advances are creating moral and spiritual questions which must be answered. The prime example is the advent of the oral contraceptive. The question arises, 'Is it morally right to prescribe this drug to an unmarried woman?'"

The keynote speakers for the meeting will discuss this issue and many

others. Doctor David Belgum is well qualified to speak on the subject of medicine and religion. He is an ordained minister of the Lutheran Church, a member of the American Psychological Association, and holds a Ph.D. from Boston University in the Psychology of Religion. He is a prolific writer and his latest book, *Religion and Medicine*, was published in 1967.

The Reverend Doctor Paul B. McCleave is best known for his work with the AMA Medicine and Religion program. He is a Presbyterian minister and was a chaplain in the United States Navy during World War II. In 1961 he became Director of the Department of Medicine and Religion for the AMA.

During the meeting Doctor McCleave will speak on the subject, "Modern Medicine and Its Paradoxes."

The program will consist of talks by the two primary speakers followed by discussions and reactions to the talks by two physicians and two clergymen.

Doctor Norfleet has invited all OSMA members to attend this meeting. □

## Doctor Dawson To Attend Editorial Conference

Among only 12 physicians from across the nation selected to attend a national editorial workshop to be held for physicians who perform some type of editorial function on state medical journals, is C. B. Dawson, M.D., editor-in-chief of *The Journal* of the Oklahoma State Medical Association. The American Medical Association through its JAMA staff is sponsoring the five-day meeting beginning Monday, January 29th, and running through Friday, February 2nd, at the AMA headquarters in Chicago.

Theme of the institute will be centered specifically around the problems of medical editors. Doctor Martin Weir, editor of the *British Medical Journal*, will be one of the faculty of three leading the meeting.

Doctor Dawson has served as editor of *The Journal* since June, 1962. □



## SMA Names Oklahoman Chairman of Council

J. Hoyle Carlock, M.D., Ardmore, Oklahoma, was elected Chairman of the Council of the Southern Medical Association at its 61st Annual Meeting held recently in Miami Beach, Florida. Doctor Carlock will also serve on several Standing Committees of the Association and also as Chairman of the Executive Committee of the Council. The Council is the governing body of the 18,000 member Association.

The Southern Medical Association, one of the largest general medical organizations in the country, embraces sixteen southern states and the District of Columbia. Annually the Association holds a scientific meeting during which some 300 scientific papers are presented and which draws an attendance of 4,000 to 6,000. The Association also owns and publishes the *Southern Medical Journal* monthly, and the *Southern Medical Bulletin*, a quarterly publication. Primarily a service organization for physicians, the exclusive purpose of the Southern Medical Association is to develop and foster scientific medicine.

Doctor Carlock received his undergraduate training at Kemper Military School and received his A.B. Degree from Oklahoma University and his M.D. Degree from Tulane University. He served his internship at Charity Hospital, New Orleans, Louisiana, and Cincinnati General Hospital, Cincinnati, Ohio. He received his residency training from Scott and White Hospital, Temple, Texas, and pursued additional studies at the Rotunda Hospital, Dublin, Ireland; American Hospital, Paris, France; and the American University, Vienna, Austria. Doctor Carlock served five years active duty during World War II in the European Theatre of Operations and was Chief of Surgery of the 121st Evacuation Hospital. He served the Southern Medical Association as an Associate Councilor from Oklahoma 1958-63 and as Councilor from 1963 to date. He holds membership in the American Medical Association and the state



J. HOYLE CARLOCK, M.D.

medical association which he served as president in 1962-63. He was president of the Tri-Counties Medical Society for two terms. He has been active in the Chamber of Commerce, Ardmore City School Board, Oklahoma Development Council, Oklahoma Expenditures Council, Oklahoma Medical Research Foundation, Bank Director, and has been active in the Methodist Church as a Steward, Chairman of the Board of Stewards, and long-time member of its Board of Trustees.

Following the annual meeting of the Southern Medical Association in Miami Beach, Doctor and Mrs. Carlock, along with a large number of other officers and members of the Association, attended a special Symposium on Tropical Sprue presented by the University of Puerto Rico School of Medicine, San Juan, Puerto Rico.

Recently appointed to serve as Associate Councilors to the Southern Medical Association representing Oklahoma were the following physicians: C. B. Dawson, M.D., Oklahoma City; Ross Deputy, M.D., Clinton; J. D. Green, Jr., M.D., Bartlesville; E. H. Shuller, M.D., McAlester; and Samuel R. Turner, M.D., Tulsa.

Elected to serve as Section Officers were: Phyllis E. Jones, M.D., Oklahoma City, Vice-Chairman, Sec-

tion on Dermatology; Daniel R. Storts, M.D., Tulsa, Assistant Secretary, Section on Industrial Medicine and Surgery; and Ardell B. Colyar, M.D., Oklahoma City, Secretary, Section on Preventive Medicine.

Appointed to serve as Assistant Editor to the *Southern Medical Journal* and the *Southern Medical Bulletin* was Harris D. Riley, Jr., M.D., Oklahoma City. □

## Professional Liability Dividend Policy Now in Force

A new dividend-type professional liability insurance policy is now available to all OSMA members. The dividend feature is in keeping with the plan of the Insurance Company of North America which was endorsed by the OSMA House of Delegates in December of 1966.

The dividend policy is an outgrowth of an agreement between INA and the OSMA. In the agreement the insurance company promised to activate a dividend policy program whenever enrollment in the new OSMA-endorsed professional liability program reached a minimum level. INA, in anticipation that the enrollment would reach the minimum level some time during 1968, started the dividend policy effective January 1st.

Approval for the new program was obtained from the Oklahoma State Insurance Board on December 12th.

Coverage under the dividend policy will be underwritten by the Pacific Employers Indemnity Company, a subsidiary of INA which is routinely used by the parent company when dividends are involved. Losses will be totally reinsured by INA.

The terms of the new dividend policy are identical to the INA policy form except for the addition of the dividend feature. There will be no change in the administration of the OSMA malpractice program since INA and PEIC employees are interchangeable.

(Continued on Page 45)



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During January and February the INA professional liability policies will be replaced by policies written by PEIC. The PEIC policy will take the place of the original INA policy from January 1st of this year to the expiration date of the original INA policy. On the expiration date of the original INA policy a second PEIC policy will be issued for the remainder of the calendar year. This is necessary in order to give all professional liability policies a common expiration date of January 1st.

The common expiration date is necessary in order for the company to calculate the dividend that is to be paid each year, if the loss factors permit.

It has been pointed out by the insurer that no insurance company can absolutely predict or guarantee in advance that a dividend will be declared. Dividends are declared by the insurance company's board of directors after an analysis of the profitability of its operations during a prior period, in this case each calendar year. Extremely low losses were reported during the first year under the INA program.

Dividends are paid from the earned surplus (profit) of the company. A formula has been established between the insurance company and the OSMA to determine the feasibility of a dividend. The formula takes into account the premiums earned, the losses paid, the expense of handling losses, the amounts set aside as reserves with which to pay claims reported but not yet paid or settled, a loss factor, and the general expenses of the company in conducting its business.

(The *loss factor*, mentioned above is determined on actuarial principles and refers to losses and expenses for incidents which have taken place but which have not yet been reported as claims. This factor is designed to protect the company against claims that result in lawsuits several years after the incident.)

Distribution of dividends is normally made to individual policyholders in accordance with the per-

centage relationship their policy premium has to the total earned premium used to compute the dividend. The first dividend calculation will be based on the 1968 loss experience.

Physicians desiring to participate in this unique dividend program should contact their local agent of the Insurance Company of North America. □

## Committee Named to Study Foreign Medical Graduate Problem

The OSMA Board of Trustees at its December 9th meeting in Oklahoma City named a special committee to study the problems connected with certificates for limited institutional practice for foreign graduates. Doctors L. C. Taylor, Oklahoma City; H. E. Denyer, Bartlesville; M. Joe Crosthwait, Oklahoma City; and Samuel R. Turner, Tulsa, were named to the committee.

During the regular meeting the Trustees heard voiced concern that foreign graduates are practicing in Oklahoma state institutions without proper licensure, and some with no licensure at all. It was pointed out that recent legislation provided for the issuance of a certificate of limited institutional practice which would entitle certain foreign trained physicians to practice medicine and surgery in specified state institutions. Concern was expressed that the requirements of this legislation are being circumvented, and in some cases ignored completely, by hospital superintendents who are permitting foreign graduates to practice medicine without any type of licensure.

A spokesman for the Oklahoma Board of Medical Examiners said that the board was cognizant of these problems and it was now in the process of determining corrective measures to be taken. The spokesman stated that it was the opinion of the medical examiners that foreign graduates should be allowed a period of one year to apply for medical license. However, during this period the hospital admin-

istrator would be required to sign an affidavit to the effect that the graduate would not practice as a medical doctor.

The controversy revolves around three separate Oklahoma statutes and their construction. One statute forbids any state institution to hire a non-citizen of the United States, but makes certain exceptions. One of these exceptions is that certain medical institutions can hire physicians who are non-citizens.

The second statute is one which became effective in April, 1967, and provided for the limited licensure of certain foreign trained physicians who were non-citizens. This statute requires that the individual meet four specific qualifications. These are: (1) He must be at least 21 years old. (2) He must be of good moral character and not addicted to habitual intemperance or the use of habit forming drugs or must not have been convicted of a felony or a crime involving moral turpitude or a violation of the narcotics law and that his medical license must never have been revoked within another state or province for cause. (3) He must be a citizen of the United States, or have filed intention to become a citizen of the United States. (4) He must be a resident of Oklahoma at the time he filed his application or must state in writing an intention to become a resident of Oklahoma after issuance of the limited licensure certificate.

In addition to these four qualifications, the Board of Medical Examiners is given authority to require him to submit evidence of his educational qualifications and his adequacy of the English language. The board does this by requiring the foreign graduate to pass the ECMFG test.

This statute provides, however, that the foreign trained physician receiving the certificate can only practice medicine in specified state owned and operated institutions.

The third statute involved is the one that defines the "practice of medicine" in Oklahoma. It provides that anyone who holds himself out as a physician, "or who shall for a fee or compensation treat disease,



injury or deformity of persons by any drugs, surgery, manual or mechanical treatment whatsoever," is considered to be practicing medicine.

When all of the provisions of the three statutes are taken together they appear to be in direct conflict. In 1966 the Department of Mental Health sought to settle this conflict by requesting an opinion from the Attorney General, Charles Nesbitt, that would clarify the situation. The outcome of this request was an opinion that only added to the confusion. In the opinion the Attorney General stated that the Mental Health Department could employ non-citizens who either hold the limited institutional practice certificate or who have made good faith application for such certificate. However, he qualified this by stating that only doctors who actually are holders of the certificate can practice medicine in Oklahoma.

The situation that the Board of Trustees committee will seek to clarify and perhaps remedy can best be outlined as follows: (1) The Department of Mental Health is following the recommendations of the Attorney General's opinion in its hiring practices of foreign medical graduates. (2) The Board of Medical Examiners is attempting to enforce the foreign medical graduate licensure program as spelled out by the 1967 statute. However, in doing so it is keeping in mind the medical service situation which could arise if the statute was strictly enforced. (3) The three statutes and the At-

torney General's opinion are not compatible and it may be that additional legislation is required.

The committee will study the situation and will recommend to all parties concerned the most equitable solution. □

## OU Medical Center Receives \$62,000 For Continuation of Project

The U.S. Public Health Service has renewed its contract with the University of Oklahoma Medical Center for the operation of a demonstration Health Manpower Intelligence Facility, a health personnel data bank.

Doctor Thomas C. Points, facility director, announced \$62,000 was awarded for continuation of the project for a second year, through November 20th, 1968.

Support for the first year totaled \$60,150. Observed by the USPHS with an eye toward funding similar programs, initial success of the Oklahoma facility last summer prompted the health service to award grants for health manpower projects in three other states.

During the past year, the facility staff has gathered information on some 17,000 health personnel in the state. The figure represents 95 per cent of the number of workers in 28 different categories of health personnel—such as physicians, nurses, technicians, therapists, dietitians.

"We are now in the process of analyzing this data to determine health personnel needs and how they can be met by the educational program of the University of Oklahoma

Medical Center and other institutions," Doctor Points said.

The facility is a basic component of Project Responsibility, the OU Medical Center's program to improve the distribution and supply of physicians and other health professionals over the state.

Statistics on the number and location of health workers will be kept up to date, as will data on the capacity and production of training programs.

Cooperating agencies include the Oklahoma Health Sciences Foundation, the Oklahoma State Medical Association, the Oklahoma Hospital Association and the State Department of Health. The advisory committee is headed by A. J. Bud Haswell, Oklahoma City, Oklahoma Gas & Electric Co. vice-president. □

## Directory To Health Services Published

The State Information and Referral Service has compiled a new directory to Oklahoma's inpatient, outpatient, mental health guidance facilities and to residential, day school, workshop and similar facilities for the retarded.

Indexed alphabetically, geographically and by services, the information is planned for the use of professional people, agencies, organizations and others to whom persons turn for help in meeting difficult situations. Each entry gives address, telephone number, sponsorship, geographical area served, services, eligibility requirements, fees, who to contact for information, and how to secure service.

Distribution of the directory, which is limited to physicians and other professional people, will be made by county health departments in most parts of the state. Physicians in a county which does not have a county health department may obtain the directory by writing to the State Information and Referral Service, State Department of Health, 3400 North Eastern, Oklahoma City, 73105. □

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## Hammarsten Heads OU Department of Medicine



JAMES F. HAMMARSTEN, M.D.

James F. Hammarsten, M.D., assumed duties last month as head of the Department of Medicine at the University of Oklahoma Medical Center, succeeding Stewart Wolf, M.D., Regents professor of medicine and psychiatry.

Doctor Hammarsten had been vice-chairman of the Department of Medicine and Carl Puckett professor of pulmonary diseases since May, 1966.

Doctor Wolf was the first full time head of the department, serving in that capacity for more than 15 years. He asked to be relieved of administrative responsibilities to devote more time to research and teaching.

The new department head was professor of medicine at the University of Minnesota Medical Center and chief of medicine at St. Paul-Ramsey Hospital, St. Paul, Minnesota, from 1962 to 1966.

Prior to that, he was chief of the medical service at the Oklahoma City VA Hospital (from 1953 to 1962) and rose from assistant professor to professor of medicine at the OU Medical Center.

Born in Grey Eagle, Minnesota, Doctor Hammarsten received a bachelor of science at the University of Minnesota and an M.D. in 1944 at

the University of Minnesota School of Medicine.

He was elected president of the Central Society for Clinical Research this year, previously holding the offices of vice-president and secretary-treasurer.

Doctor Hammarsten is a member of the American Board of Internal Medicine, of the American Thoracic Society's Committee for Guidance of the Respiratory Disease Program and its Ad Hoc Planning Committee, and is chairman of the American Heart Association Subcommittee on Pilot Projects.

His professional society affiliations also include Alpha Omega Alpha, Sigma Xi, the American Clinical and Climatological Association, American College of Physicians, and the American Federation for Clinical Research. □

## Fifty-Three Sign For European Tour

The OSMA sponsored European Tour is "going over big." Thus far, 53 persons have signed up for the tour of European cities scheduled for July 17th through August 7th of 1968.

This special tour of Europe was designed for physicians and their families and is being offered in two parts. The first part is a 16-day main tour featuring visits in London, Stratford-on-Avon, Paris, Luerne and Rome.

The second part is a seven-day extension of the main tour with visits to Florence, Venice and Berlin.

Most of the reservations received thus far have specified the main tour plus the seven-day extension.

The 16-day main tour costs \$680 which includes air fare to and from Europe from New York City. The seven-day extension costs an additional \$149 per person. Physicians wishing to take their children under age 12 will receive a discount of \$115 per child.

Additional savings can be made if a family group uses one of the several economy "family plans" for air travel between Oklahoma and New York City.

Persons interested in taking only the 16-day main tour are urged to make their reservations as soon as possible. In order for the tour to qualify for the low air rate from Rome to New York City, at least 15 persons must be on the flight.

The seven-day extension tour already has enough reservations to qualify for the lower rate.

For reservations or information please contact: Mr. Don Blair, Oklahoma State Medical Association, P.O. Box 18696, Oklahoma City, Oklahoma 73118. Telephone: Area Code 405 VI 2-3361. □

## Nurses-Physicians To Discuss Patient Care

"Nurse - Physician Collaboration Toward Improved Patient Care" will be the theme of the first statewide conference for physicians and nurses. The meeting will be held February 15th through 17th at Fountainhead State Lodge and is being jointly sponsored by the OSMA and the Oklahoma State Nurses Association.

Fifty nurses and fifty physicians are being invited to attend the three-day meeting to discuss the mutual problems of the two professions.

Maxwell A. Johnson, M.D., President of the OSMA, said, "This conference is designed to open a channel of communications between physicians and nurses. It will give them an opportunity to hold open and frank discussions on their problems of mutual interest and on the problems of one profession that affect the efficiency of the other."

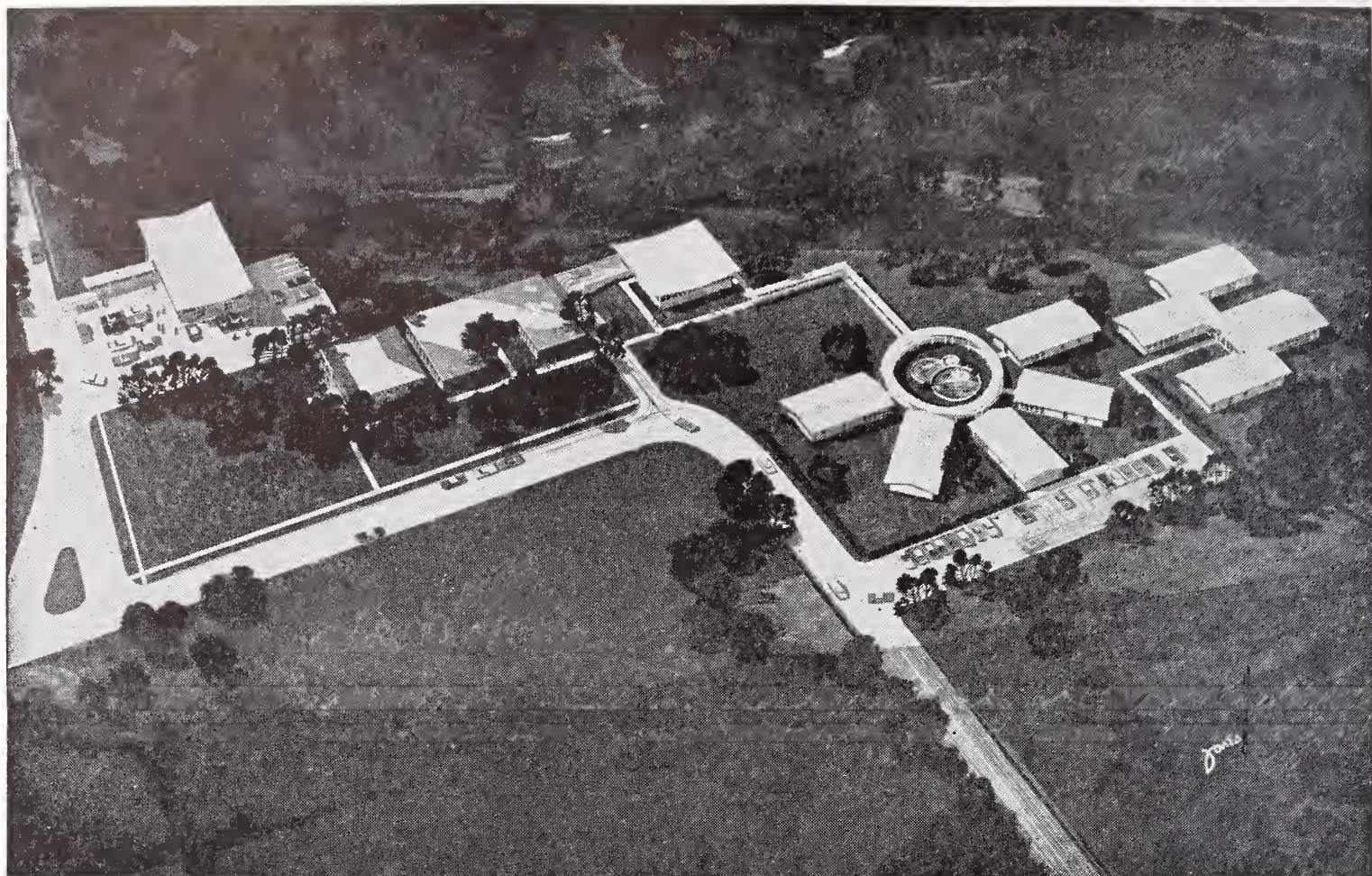
The conference is a project of the OSMA Committee on Nursing, chaired by Joe L. Duer, M.D., of Woodward. He stated that the conference was being designed to make maximum use of small group discussions.

Duer said, "Our objective is to give physicians and nurses an opportunity to discuss all aspects of their professional relationship."

One of the primary speakers during the conference will be a "patient." The patient, Mrs. Irene Bowman of Woodward, is a nationally

(Continued on Page 49)





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(Continued from Page 47)

known world traveler and is a past speaker on the Knife and Fork circuit. She is a witty and entertaining speaker who has been a "patient" in hospitals around the world.

Conference discussion topics may include future action to further improve nursing standards, action to increase the number of nurses, and to establish goals for future nursing education in the state. □

## Legislative Digest

The following bills of interest to the medical community will be considered during the second session of Oklahoma's Thirty-First Legislature. The second session convened at the State Capitol in Oklahoma City on January 2nd.

At the end of the first session of the Thirty-First Legislature several bills of interest to the OSMA were still in study committees of the House or Senate. These bills are still alive and can be considered during this second session.

In addition to the bills left over from the first session several new bills have been filed during the interim between the two sessions.

### New Bills

Senate Bill 477, authored by Senators Stipe and Stansberry, will create a state hospital construction and maintenance fund board and will call for the establishment of a medical school in Tulsa. The bill provides for the appointment of the board members, fixes their terms of appointment, and prescribes their duties.

House Bill 1032, authored by Representative Grey, is companion legislation to Senate Bill 477. This bill would provide for the funding of the above mentioned board. It would do so by placing an additional two-cent tax on each package of cigarettes sold in Oklahoma.

The OSMA Legislative Committee has taken no position on either of these bills at the present time.

Other new bills of interest to physicians include House Bill 985, authored by Jerry Sokolosky of Oklahoma City. It would establish legal authorization for the conducting of autopsies in unexplained deaths in the event that written consent could not be obtained. It gives the district court authority to order the autopsy and provides an appeal to the State Supreme Court.

As additional new bills are introduced into the state legislature the *OSMA Journal* and the *OSMA NEWS* will report on them.

The following is a list of bills introduced during the first session of the Thirty-First Legislature. These bills will be considered during this second session. The bills are listed by number and a short synopsis of each bill is given along with its present location in the legislature. The OSMA's position on each bill is shown in italics.

### Senate Bills

S.B. 20: An act creating a water commission in the health department authorized to hear water pollution complaints. *Endorsed.* Currently in Senate Committee on Health, Welfare and Veterans Affairs.

S.B. 32: Amending uniform narcotic drug act and authorizing Oklahoma Drug Commission to classify products as dangerous. *Endorsed.* Currently in House Committee on Social Welfare and Public Health.

S.B. 48: Authorizing Board of County Commissioners to contract for ambulance services. *Endorsed.* Currently in House Committee on County, State and Federal Government.

S.B. 95: Providing claimant or attorney may ascertain existence of liability insurance, the amount and provisions in damage cases. *Opposed as would probably increase amounts sought in physicians liability suits.* Senate Committee on Judiciary.

S.B. 116: Prohibiting any practitioner of healing arts from advertising, including chiropractors. *Spon-*

*sored and Endorsed.* Senate Committee on Business, Industry and Labor Relations.

S.B. 216: Amending the public health code by fixing minimum requirements for physical facilities for nursing, rest or specialized homes. *Endorsed.* House Committee on Professional and Occupational Regulations.

S.B. 346: Authorizing Board of Health to adopt rules and standards for the storage and dispensing of medicine in hospitals. *Endorsed by House of Delegates.* Senate Committee on Health, Welfare and Veterans Affairs.

S.B. 416: Providing physician and hospitals shall be paid when Workmen's Compensation patient becomes deceased under care. *Sponsored and Endorsed.* House Committee on Insurance.

### House Bills

H.B. 710: An act expanding the abortion statutes in Oklahoma. No position was taken by the association on this bill. *Amendments were offered by the association to tighten the bill and protect Oklahoma physicians if it is passed.* Senate Committee on Judiciary.

H.B. 731: Authorizing insurance companies to join together in issuance of insurance coverage supplement to Medicare. *Endorsed.* Senate Committee on Business, Industry and Labor Relations.

H.B. 851: Providing one member of the State Board of Health shall be a licensed chiropractor. *Opposed.* House Committee on Social Welfare and Public Health.

H.B. 852: Prohibiting exclusion of chiropractors from certain public programs. *Opposed.* House Committee on Professional and Occupational Regulations.

H.B. 928: Permitting injured employees under Workmen's Compensation to select their own doctor under certain circumstances. *Opposed as would allow expansion of chiropractic.* House Committee on Insurance. □



## Symposium on Neoplasia In Man and Animals

The Oklahoma Veterinary Medical Association and the Oklahoma Medical Research Foundation are co-sponsoring a "Symposium on Neoplasia in Man and Animals" which is to be held in conjunction with the 53rd Annual Convention of the Oklahoma Veterinary Medical Association on February 4th, 1968. The symposium is designed to present current information on a variety of neoplasia to the practicing veterinarian, physician and individuals with general interest in biomedical research.

Three papers are to be presented on the Sunday afternoon program. The first, given at 2:00 p.m., is by Doctor Robert S. Brodey of the Department of Clinical Sciences, School of Veterinary Medicine, University of Pennsylvania. Doctor Brodey's paper, entitled "Recent Advances in Our Knowledge of Animal Neoplasms" is concerned with bovine, canine and feline lymphosarcoma, and canine mast cell and mammary neoplasms. At 3:00 p.m., Doctor Emil Freireich of the M. D. Anderson Hospital and Tumor Institute in Houston, Texas, presents a paper on "The Current Concepts of Etiology and Therapy of Neoplasia in Man," placing emphasis particularly on the leukemias. Doctor Freireich has served on the staff of the National Cancer Institute and is presently Chief of the Section of Research Hematology at the M. D. Anderson Hospital in Houston. At 4:00 p.m., Doctor K. B. DeOme, Director of the Cancer Research Genetics Laboratory in Berkeley, presents a paper on "The Mouse Mammary Tumor Virus." Doctor DeOme, who has directed the Laboratory since 1950, recently has shown the variable effects and interrelations of genetic factors and hormones on the biology of the viral agent.

The symposium will be held in the Imperial Ballroom of the Skirvin Hotel in Oklahoma City. Attendance does not require a registration fee.

Visitors wishing to attend a social hour and buffet following the symposium may purchase tickets at the time of the symposium. □

## Tennis Association Announces Event

The newly formed American Medical Tennis Association will conduct its first event at Fort Lauderdale, Florida, February 14th through 17th.

The various competitions will include open singles, open doubles, open singles consolation, senior singles and senior doubles. Seniors are for those physicians who will be 45 years of age or more during 1968.

Entry fee is \$5.00 per event, payable at Fort Lauderdale, and the deadline for entering is February 7th. Send your entries to *Rx Golf and Travel* magazine, Box 25125, Oklahoma City, Oklahoma 73125. □

## BOOK REVIEWS

**MONGOLISM** (Ciba Foundation Symposium), by: G. E. W. Wolstenholme and Ruth Porter, eds. 95 pp. 23 illustrations. Boston: Little, Brown and Company.

Lord Brain was chairman for this conference of 20 international experts in the field of Mongolism. For those who are involved in statistics, intricate chromosomal analysis, or current investigational areas in Mongolism, this is an excellent review. For those whose interests lie in the clinical area, there are only occasional items in the discussions at the end of each presentation and in the general discussion at the end of the book which warrant perusal.

Papers presented involve Japanese statistics regarding parental age, live birth order, and pregnancy-free intervals; consanguineous marriages; dermatoglyphics; DNA synthesis; and abnormal granulocyte kinetics. The results are not unexpected. As the maternal age rises, the incidence increases with no socioeconomic effect. Rising paternal age has no effect. The relative incidence decreases with increasing birth order, and there is no significant difference following brief, intermediate, or long pregnancy free

intervals (which they felt might be significant in view of increased use of contraceptive pills). Consanguineous marriages do not give rise to an increase in numbers and thus there is no support for a recessive genetic factor. The remainder of the studies are inconclusive and serve to indicate areas for further research.

Lord Brain, who married a direct descendent of Doctor Down, gives an introduction to the book outlining the historical background of the syndrome. The book does point out the many unsettled problems regarding Mongolism such as an etiology for the chromosomal difficulties, the difficulties involving the identification of mosaics, and even a universally acceptable name for the syndrome.—Carol Saunders, M.D.

**THIAMINE DEFICIENCY.** Edited by G. E. W. Wolstenholme, O.B.E., M.A., F.R.C.P., F.I. Biol., Director and Secretary to Executive Council, The Ciba Foundation, and M. O'Connor, B.A., Editorial Assistant. Ciba Foundation Study Group No. 28, 158 pp. Boston: Little, Brown and Company, 1967.

The booklet contains a wealth of information on the early as well as the most recent research findings and advances in the knowledge of thiamine deficiency and metabolism. The symposium was held in honour of Sir Rudolph Peters, a distinguished pioneer of thiamine research, and includes the contributions from 12 leading authorities. The treatise is mostly from the viewpoint of the investigator actively engaged in the research of thiamine biochemistry, physiology and the mechanism of the pathologic lesions in deficiency.

One brief contribution is devoted to clinical thiamine deficiency as experienced in Shanghai. It was pointed out that overt clinical thiamine deficiency is at present rarely encountered in well developed countries and when found, is usually of a minor degree, seldom associated with the elevated blood pyruvate levels of acute beriberi. An increased blood pyruvate concentration is not specific for thiamine de-



iciency and may be found associated with polyneuritis of unknown etiology, exercise, fever, thyrotoxicosis, heavy metal poisoning, motor neuron disease, pregnancy and diabetes.

The authors discussed in detail the role of thiamine pyrophosphate as a co-factor in three enzyme systems, namely pyruvate dehydrogenase, oxoglutarate dehydrogenase, and transketolase (in the hexose monophosphate pathway). They agreed that testing of the transketolase system with any of several available methods, is the most sensitive index of sub-optimal thiamine nutrition. Evaluation of this enzyme system was found suitable and sensitive for demonstrating very early deficiency and for assessing the thiamine status of population groups. One of the tests which was employed for this purpose utilizes the accumu-

lation of ribose 5-phosphate or the sedo-heptulose residue of hemolyzed erythrocytes. By adding thiamine pyrophosphate (TPP), transketolase activity could be stimulated and ribose 5-phosphate diminished in the medium. The TPP effect is the percentage stimulation above the original activity, produced by adding

TPP to the sample.

This book is of limited value to the clinician, but nutritionists and investigators with interests in thiamine metabolism should find it a most valuable asset.—J. G. Prinsloo, M.D., Head, Nutrition Clinic for Children, National Nutrition Research Institute, Pretoria, South Africa □

## DEATH

W. P. SPENCE, M.D.  
1876-1967

A 91-year-old Sayre physician, W. P. Spence, M.D., died in Sayre, December 11th.

Doctor Spence, an EENT specialist, graduated from the Denver and Gross College of Medicine in 1905. He came to Oklahoma during territorial days, opening a general practice in Ada and later at Okmulgee. In 1923 he moved to Sayre where he remained active until his death.

In 1955 the Oklahoma State Medical Association presented him with a Life Membership in recognition of his fifty years of service to his profession.

## Miscellaneous Advertisements

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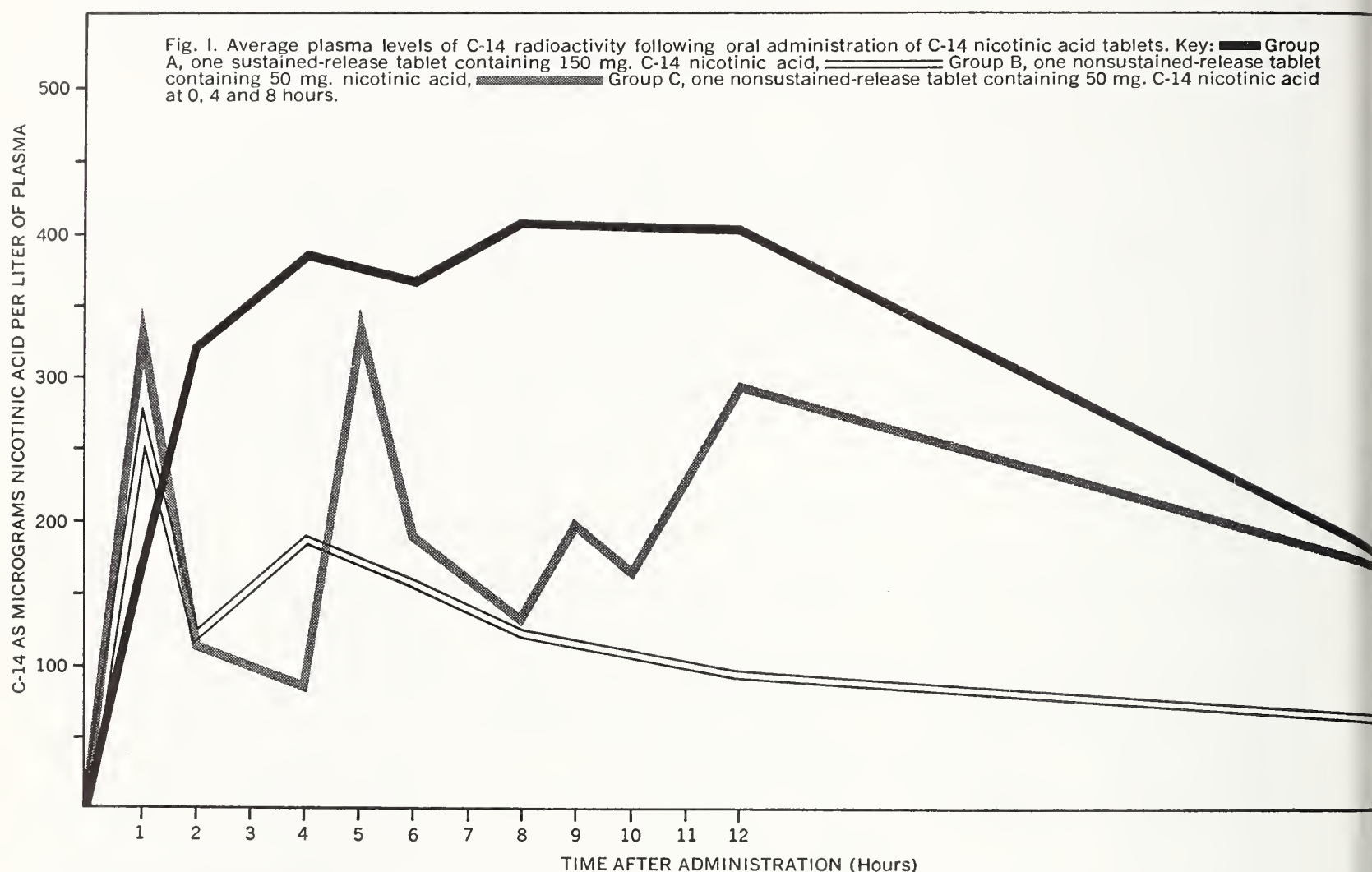
**INTERNIST,** OU graduate, desires clinic or group practice in Oklahoma City. Residency and military obligations completed. Contact Boyd O. Whitlock, M.D., 4315-1 O'Donnell Hts., Fort Riley, Kansas.

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**PHYSICIANS NEEDED** in Enid, Oklahoma. Due to accidental death of partner, Enid Clinic needs a general surgeon immediately. Office space available in relatively new clinic building adjacent to Enid General Hospital. Opportunity to become stockholder in clinic. Also needed: General practitioner, ophthalmologist, ENT, obstetrician-gynecologist, urologist. Excellent city for practice, professional associations, and living. Contact C. J. Roberts, M.D., c/o Enid Clinic, 617 South Quincy, Enid, Oklahoma 73701.



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## Grandpa's Grandpa

*Today's goal — prolonging life — may be tomorrow's ethical quagmire. A Chicago surgeon tells how a lad, as yet unborn, might discuss a "death" in the family.*

**GRANDPA'S** Grandpa was scheduled to die tomorrow, but three members of the family said they positively couldn't get away for his funeral any time soon, so the demise of Grandpa's Grandpa was postponed again, giving him his sixth new lease on life.

He's a very old man now and a lot of grandpas have come and gone in our family in his time. That's why we call him GG for short, to tell him apart from the others.

GG died once, but at the time he was in the hospital having surgery for a hernia. When his failing heart stopped, they hooked him up to an artificial heart and restored his life. That was more than 50 years ago, when GG was about 75, and the doctors and nurses who performed that hook-up are now gone.

What with social security, medicare, and his annuity, GG has always had good care and has never really been an invalid. He has had a couple of leg fractures and an occasional bout of asthma or indigestion, but on the whole his health is good, considering his 125 years. He weighs only 90 pounds, so it doesn't cost much to keep him—two small meals a day and a bit of wine. He doesn't smoke and he sits so still that his clothing lasts for years, altho it does get somewhat unfashionable.

The consensus seems to be that GG has a good disposition, otherwise the family would have let him die long ago—by just stealing the battery that runs his heart, for instance, or simply failing to replace it with a new one in June, causing a sure summer funeral.

About the time I was born, GG turned 100. That was the year when the family first decided that they should let GG pass away, a decision that, I understand, didn't come easily, but took the best part of an afternoon.

There was considerable opposition to letting GG die, mainly because he was not really in poor health for a man of his age. But it was admitted that, altho he had a heart in good working order, his brain was badly run down.

By a slim majority, GG was doomed. And then he was resurrected. Someone, who had reached a pretty high station in life by living by the rules, noted that a quorum was not present.

After that first meeting, the subject of GG's funeral didn't come up again for years, possibly because his health seemed to be getting even better, but probably because GG was becoming an asset while his heirs became fewer and fewer.

A small sum of money he had once invested had grown quite large over the years because he used little of the income and the rest just kept accumulating and compounding.

In the summer of his 110th year GG's fate was again discussed at a family meeting. No one mentioned it openly, I've been told, but everyone knew that if GG was allowed to die then, a no-good grandnephew would get a sizeable portion of the estate.

The vote was in favor of keeping GG with us, and a farsighted vote it was because the no-good heir passed on within the year.

With the no-gooder gone, there seemed little reason to prolong the old gentleman's life, so a special session was called. It was noted at the meeting that GG was becoming more forgetful and he sometimes refused to eat. But before the matter came to a vote, a couple of juniors enrolled in pre-med at one of the universities spoke up and said GG was becoming a valuable research specimen.

The logic of their arguments won over the rest of the family, and GG's funeral was put off for the third time.

At times tho, it almost seemed as if the decision had not been a wise one. During the following winter, GG fell and broke his right leg. Later he fell and broke his left leg. Each time he was hospitalized for six weeks before returning home.

While in the hospital, the artificial prolongation of his life, which everybody agreed was really quite useless, became the subject of widespread debate among doctors, nurses, medical students, and orderlies.

Continued on page 91





It has been stated that America is facing an epidemic — an epidemic of heart disease. Today coronary heart disease is listed as the nation's most serious medical problem. There is a real urgency in the work of the American Heart As-

sociation, the research efforts going on in our medical center in Oklahoma City, and in the heart projects of the Oklahoma Regional Medical Program. Especially noteworthy is the metabolic research being done in Doctor Robert Furman's department at the Oklahoma Medical Research Foundation.

It is most appropriate that this issue of our *Journal* is devoted to the reporting of advances in cardiology. It remains for these advances to be applied clinically in certain instances. As the Oklahoma Regional Medical Program develops in the fields of heart, cancer and stroke, under the temporary direction of Doctor Kelly West, we may expect more progress in the mass application of our knowledge.

For example, a demonstration project in Hartford, Connecticut has recently shown the value of mass screening of electrocardio-

grams. Computer-assisted analysis of more than 4,100 outpatient electrocardiograms has shown at least one abnormality in nearly half the group. In this study the ECG's were sent to Washington, D.C., by Dataphone over a leased telephone line. Within minutes, the computer in Washington returned its analysis by teletype.

I am sure we will see an increasing use of this or some other method to detect "silent" cardiac disease. The computer is just beginning to be utilized in medicine. Some of the pioneering work in utilizing the computer in medical *education* is taking place at the University of Oklahoma Medical Center. Graduate students are receiving a basic course in cardiology through "conversations" with a computer. This course was developed by Lynn, Brandt, Harless and Lucas. The Oklahoma Regional Medical Program will support the development of other computer applications including the continuing education of health professionals.

I hope that all of you will read this issue carefully. Even if you do not take care of heart patients yourself, you and your family have a vital personal interest in keeping up with cardiac research.

Sincerely yours,

*Maxwell A. Johnson*



# Examination of the Heart: Inspection, Palpation and Percussion of the Precordium

LOYAL LEE CONRAD, M.D.

*Only certain features of the physical examination are essential for the differential diagnosis of cardiac disorders. The logic of these features is critically evaluated.*

## GENERAL CONSIDERATIONS

**I**NFORMATION DERIVED from inspection, palpation, and percussion of the precordium is of two kinds. The first falls in the category of those physical signs which must be elicited in each patient undergoing a cardiac examination because of their importance to the differential diagnosis; the second consists of those signs which are generally not essential to the diagnosis but whose presence leads to investigation or rumination (usually called "pathophysiologic correlations"). The latter constitute the traditional armamentarium of the erudite clinician.

## SIGNS OF THE FIRST CATEGORY

Knowledge of the following are essential to elaboration of the differential diagnosis: The presence of cardiac enlargement, and

evidence of right and left ventricular hypertrophy.

*Cardiac enlargement.* Approximately 80 per cent of all patients with cardiac disease show cardiac enlargement; hence, when enlargement is present, the examiner may be confident that heart disease exists. To detect the presence of cardiac enlargement it is necessary to determine the relationship of the apex impulse, visible or palpable, or of the left border of cardiac dullness on light percussion, to the midclavicular line. In 95 per cent of normal subjects, the apex impulse lies either in the midclavicular line or inside it. In a few, it is found as much as a centimeter outside the midclavicular line. Variations in configuration of the thoracic cage make the midclavicular line the most useful frame of reference for determining cardiac enlargement.

---

*Since his graduation from the University of Oklahoma School of Medicine, Loyal Lee Conrad, M.D., has been certified by the American Board of Internal Medicine. He is now Professor of Medicine at the University of Oklahoma School of Medicine.*

*Doctor Conrad is a Fellow of the American Federation for Clinical Research, the Central Society for Clinical Research and the Southern Society for Clinical Investigation.*



*Right ventricular hypertrophy.* A systolic impulse along the lower left sternal border signifies hypertrophy of the right ventricle. The sensation is usually tapping in quality rather than heaving because of the immobility of the sternum and anterior thorax overlying the right ventricle. Occasionally the degree of hypertrophy may be so great that the apex impulse is formed by the right ventricle leading to the false impression of left ventricular hypertrophy. In this case, the electrocardiogram will solve the problem.

*Left ventricular hypertrophy.* The hypertrophied left ventricle imparts a thrusting or heaving sensation to the palpating finger. It is a sustained lift rather than a tapping sensation as may be observed in hyperkinetic cardiovascular states. The apical thrust of left ventricular hypertrophy is usually visible; the normal apex impulse is not visible in most normal subjects. Even a slight heave should be suspicioned as being abnormal.

*Significance of ventricular hypertrophy.* Ventricular hypertrophy indicates either that an abnormal workload due to shunt or resistance load has been placed on one or other of the ventricles or that the normal workload has led to hypertrophy of a ventricle damaged by disease. Thus, right to left shunts lead to right ventricular hypertrophy in atrial septal defects of the secundum type, and in total anomalous pulmonary venous drainage. Patent ductus arteriosus and ventricular septal defects result in left ventricular hypertrophy. Resistance loads such as pulmonary valvular stenosis result in right ventricular hypertrophy and aortic stenosis in left ventricular hypertrophy. On the other hand, the myocardium afflicted by occlusive coronary artery disease develops left ventricular hypertrophy as does the myocardium in other cardiopathies presumably because the left ventricle, being damaged, is subjected to a higher resistance load.

#### SIGNS OF THE SECOND CATEGORY

*Diastolic impulses:* The ventricular gallop, the accentuated third heart sound, may not

only be heard but may be felt as a slow outward movement of the chest in early diastole. It may even be palpable when it is not audible due to its low frequency. It occurs during the early phase of rapid ventricular filling and has the same significance as its audible counterpart. The palpability of an extra sound in early diastole differentiates the ventricular gallop from the opening snap which cannot be felt ordinarily. The atrial gallop or accentuated fourth heart sound occurring in late diastole imparts a double thrust to the apex impulse on palpation just as it resembles audibly a widely split first heart sound. It is better seen than felt, the apex impulse appearing to be bifid due to its presence. Finally, the accentuated closing sounds of the pulmonary or aortic valves may be palpated when hypertension of either circuit is present. The pulmonic second sound may be palpable in normal children, however, and it also may be palpated in the thin-chested adult in the absence of pulmonary hypertension.

*Systolic impulses:* Dilatation of the ascending aorta can often be diagnosed from observing an impulse in the right parasternal area at the level of the sternal angle. Occasionally the same phenomenon recurs to the left of the sternum due to a greatly dilated left pulmonary artery. The other systolic impulse of practical importance is that produced by a ventricular aneurysm due to previous myocardial infarction. This impulse is felt, and may be seen as well, in the midprecordium and resembles the impulse of right ventricular hypertrophy. Many old infarcts, possibly 50 per cent of the total, can be diagnosed in this fashion from physical examination, and many more recent infarcts, perhaps 70 per cent of the total, may be appreciated by palpation.

*Palpable murmurs:* A thrill may be palpated when any murmur is intense enough. These are usually grade three or louder. A thrill without a murmur cannot be rationalized. □

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800 N.E. 13th Street, Oklahoma City, Oklahoma



# Physical Examination of the Heart

## Auscultation

JOHN D. KYRIACOPOULOS, M.D.

*... Then out his stethoscope he took,  
And on it placed his curious ear;  
Mon Dieu! said he with a know-  
ing look,  
Why, here is a sound that's  
mighty queer!...*

Oliver Wendell Holmes

### INTRODUCTION

**N**OISES GENERATED within the functioning heart in health and disease reflect hemodynamic events that occur during the cardiac cycle and are classified as *sounds* and *murmurs*.

Proper analysis of certain characteristics of the sounds and murmurs, such as frequency, intensity, quality and transmission not only provide the correct diagnosis, but often reveal the severity of the disorder.

Intimately related to proper interpretation of the cardiac sounds and murmurs is the technique of auscultation including the examining room, the patient's and physician's position and the selection of the proper stethoscope.

### THE STETHOSCOPE

For auscultation of the heart to yield maximum results the proper stethoscope must be

From the Department of Medicine, University of Oklahoma Medical Center and Medical Service, Veterans Administration Hospital, Oklahoma City, Oklahoma.

selected. The tubing of the stethoscope should be relatively firm. Modern plastic materials generally are more satisfactory than the rubber tubing. The internal diameter and the length of the tubing play an important role because the amplitude of the pressure waves transmitted through the tube is inversely related to its volume. Therefore, a long tubing of a large diameter unnecessarily increases the volume and greatly decreases its efficiency. Conversely, a tubing of too small diameter is undesirable because it attenuates the sound due to frictional losses, whereas a short stethoscope imposes great inconvenience. It appears that an internal diameter of one-eighth or three-sixteenths of one inch and length of 15 to 20 inches from chest-piece to ear-piece, is the most satisfactory combination.

The bell piece is valuable in auscultating low frequency sounds. Air tight contact with the chest skin without undue pressure is of utmost importance. Different sizes of bell pieces with sharp edges to fit a given intercostal space therefore are necessary.

The value of the diaphragm lies in its ability to filter out low frequency noise and hence to concentrate high frequency sounds. Best results are obtained with a rigid diaphragm. Since perfect contact is not necessary, a rather large diaphragm ( $\frac{3}{4}$ " x  $\frac{1}{2}$ ") is most advantageous.

Cracks in the chest pieces, leaks in the tubing and ill-fitting ear pieces not only decrease the efficiency of the stethoscope as a sound transmitting instrument but adulterate the sound by allowing the introduction of ambient noise. In our experience the



Rappaport-Sprague stethoscope has been most satisfactory. It has the disadvantage of being somewhat bulky and having breakable chest pieces.

### THE CARDIAC SOUNDS

The cardiac sounds may be divided into: A. Valve closing sounds, B. Valve opening sounds, C. Ventricular filling sounds.

#### Valve Closing Sounds

It is well recognized that the audible components of the first and second heart sounds are due to closure of the valves. Each sound, therefore, is due to left and right sided events.

*First Sound*—The first sound consists of a mitral and tricuspid component due to the asynchronous closure of the two valves. Following atrial relaxation and reversal of the atrioventricular gradient the ventricular pressure quickly exceeds that in the atrium leading to closure of the mitral and tricuspid valves, since there is a difference of 0.02 to 0.03 seconds between the two, the mitral valve closing first.

The first sound is loudest at the lower end of the sternum. The mitral component is of greater intensity, and heard best over the mitral area; whereas the tricuspid component is of lower intensity and heard best over the tricuspid area. Because the mitral and tricuspid valves close at lower pressure compared to the semilunar valves, the first sound is low in frequency and longer in duration. Therefore, the two components tend to fuse so that splitting of the first sound is not easily recognized.

The intensity of the first sound is mainly governed by the position of the A-V cusps at the onset of ventricular systole. Closing of the cusps from a widely opened position results in a loud sound. Wide opening of the cusps occurs when the atrial pressure is elevated as in mitral stenosis when the flow is increased as in high output states (anemia, thyrotoxicosis, etc.) from shortening of the ventricular filling time (tachycardia) or finally from a late surge of blood due to atrial contraction as with a short P-R interval.

*Second Sound*: The second sound is due to closure of the semilunar valves, the aortic

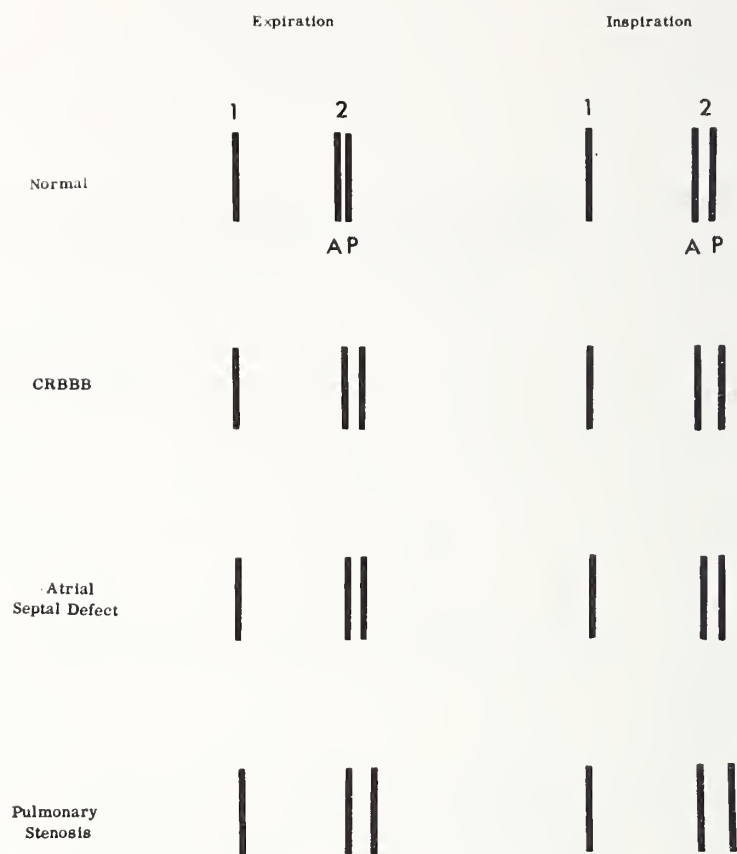


Figure 1

valve closing first. It is of higher frequency and shorter duration presumably because the aortic and pulmonary valves close at higher pressures than the A-V valves. The two components of the second sound can be heard readily at the pulmonary valve area in almost every person, particularly during inspiration. This is because right ventricular volume increases during inspiration due to improved venous return. Increased ventricular volume requires longer systole and hence causes delay in closure of the pulmonary valve. In addition, the aortic valve closes somewhat earlier since the left ventricle receives less blood during inspiration. In expiration, the same hemodynamic events, but in reverse order, lead to narrow splitting of the second sound.

Whenever right ventricular systole is delayed as in complete right bundle branch block or prolonged because of increased flow or increased resistance, closure of the pulmonary valve is retarded, resulting in wide splitting of the second sound (figure 1).

The widest splitting occurs in severe pulmonary stenosis. This may be difficult to recognize since usually the aortic component is buried in the murmur and the pulmonary component is soft and faint.



In ventricular septal defect, splitting of the second sound is likewise wider than normal, chiefly because the aortic valve closes earlier. For the same reason, splitting of the second sound may be wide in mitral valve regurgitation.

In atrial septal defect, the two components of the second sound, in addition to being widely split, are fixed so no variation in their time interval is observed during either phase of respiration.

The mechanism for fixation of the splitting of the second sound in patients with atrial septal defect is not well established.

It is now believed that changes in the magnitude of the L-R shunt reciprocal to those of atrial inflow during respiration are responsible for fixation of the splitting of the second sound in atrial septal defect. That the left to right shunt diminishes during inspiration and increases during expiration, so that the right ventricle receives a constant volume of blood throughout the respiratory cycle, is documented by an increase in O<sub>2</sub> saturation of pulmonary arterial blood drawn in expiration. Wide and fixed splitting of the second sound is the most reliable diagnostic auscultatory finding of atrial septal defect.

When splitting of the second sound increases during expiration, and narrows or actually becomes a single sound during inspiration it is referred to as paradoxical splitting. This occurs whenever left ventricular systole is prolonged as in aortic stenosis, systemic hypertension, coarctation of the aorta, patent ductus arteriosus, or delayed as in complete left bundle branch block. In all these situations aortic valve closure occurs after the pulmonary valve (figure 2).

Finally, the second sound may be heard as a single sound in truncus arteriosus and in tetralogy of Fallot or in cases where either of the components is buried in a murmur or is very faint as in stenosis of the semilunar valves.

Intensity of the second sound increases in systemic and pulmonary hypertension. In systemic hypertension the aortic component of the second sound becomes loud and has a tambouric quality, possibly due to wider excursions of the aortic leaflets resulting from enlargement of the aortic annulus.

The pulmonary component of the second

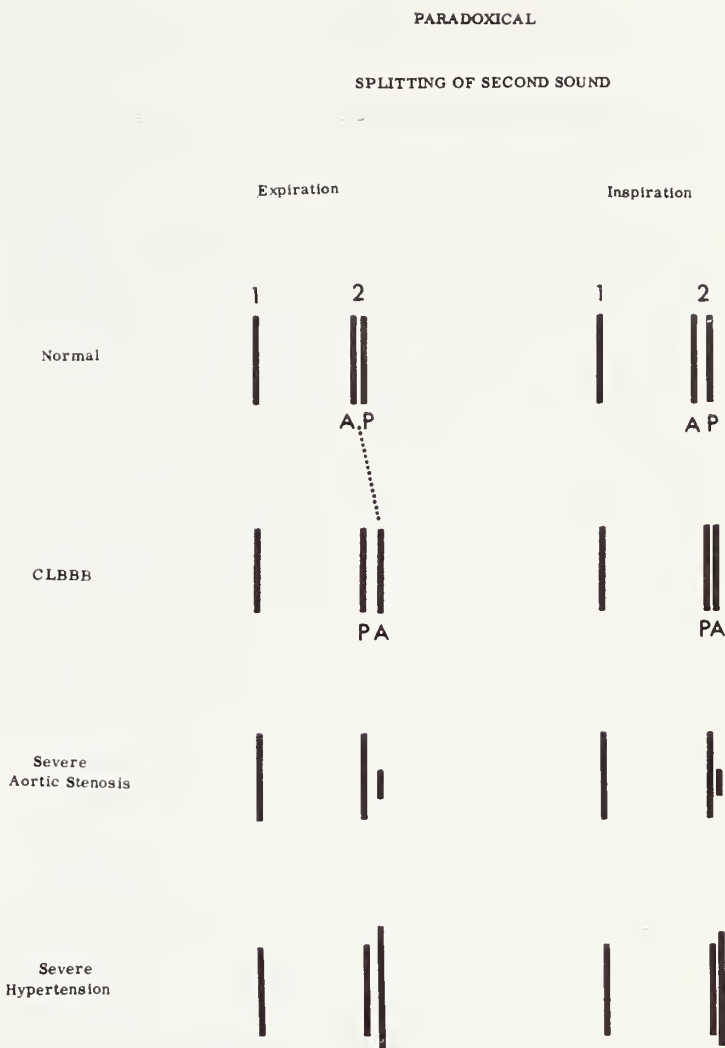


Figure 2

sound becomes accentuated in pulmonary hypertension and may be heard over the entire precordium. Therefore the presence of a split second sound at the apex is a reliable clinical sign of pulmonary hypertension.

The importance of separating the second sound into its components cannot be over-emphasized. In instances where this cannot be done because the intensity of one component drowns the other, it is still worthy

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of stating whether the second sound is louder over the aortic or pulmonary area.

#### *Valve Opening Sounds*

*Opening Snap:* (figure 6) Sounds associated with opening of the valves are normally inaudible. They become accentuated in certain conditions as in stenosis of the A-V valves, provided the cusps are mobile. Stenosis of the mitral valve produces a loud sound at the time it opens owing to the sudden tension of the cusps due to increased left atrial pressure. The opening snap is heard best along the left sternal border and it is louder during expiration, thus it can be differentiated from the pulmonary component of the second sound. It is a high frequency sound and occurs between 0.03 to 0.12 seconds after the aortic component of the second sound. The nearer to the aortic component that it occurs, the more severe the mitral stenosis is, for it indicates that the left atrial pressure is greatly elevated. The A<sub>2</sub>-OS interval varies when atrial fibrillation is present, being shorter in duration after a brief diastolic period. The opening snap is of immense importance and when it is absent, the diagnosis of mitral stenosis is under suspicion. However, it may be absent when the mitral valve is heavily calcified. Likewise, in severe mitral stenosis, the opening snap may be indistinguishable from the second sound. Conversely, the presence of a distinct opening snap reflects the pliability of the valve and indicates a moderate degree of stenosis.

*Ejection Sound:* The ejection sound is generated at the time the semilunar valves open, provided the cusps are mobile. It is not yet clear whether it is caused by vibrations of the opening valves or by distention of the vessel wall. It follows the first sound by 0.05 to 0.08 seconds. It is of high frequency and becomes audible when resistance to the flow at the semilunar valve is increased during the early part of the ejection or when the great vessels are dilated (figure 7).

The pulmonary ejection sound is present in mild or moderate congenital pulmonary valve stenosis, idiopathic dilatation of the pulmonary artery and pulmonary hypertension. It is localized over the second left in-

tercostal space and becomes faint in inspiration. The aortic ejection sound is heard in mild and moderate aortic valvular stenosis, systemic hypertension, truncus arteriosus, dilatation of the aorta and occasionally in coarctation of the aorta. It is audible over the aortic valve area and transmitted toward the apex.

#### *Filling Sounds*

*Third Heart Sound:* The ventricular filling sounds are diastolic sounds and comprise the third and fourth heart sound with their pathological counterparts, ventricular and atrial gallop, respectively. The third heart sound is produced at the end of the rapid filling phase of diastole, thus it follows the second sound by an interval ranging from 0.10 to 0.16 seconds. It is of very low frequency and intensity, audible mainly over the apex, but extends over the precordium. Its intensity increases with inspiration and with faster heart rates (figures 3, 5).

The third heart sound is heard frequently in healthy children and less frequently in normal young adults, but practically never beyond the age of 40. When abnormal, it strongly indicates that ventricular filling is rapid or increased. Thus it may be produced in either ventricle in the presence of A-V or semilunar valve regurgitation, shunts, or in advanced congestive heart failure where it is extremely common. In all these instances it is called ventricular gallop and it is louder than the physiological third heart sound.

In compensated mitral valve disease, the presence of a ventricular gallop indicates that hemodynamically significant stenosis is highly improbable, since in stenosis ventricular filling becomes slow and decreased.

In the absence of clinical failure a ventricular gallop is present occasionally in hypertensive and other myocardiopathies.

Ventricular gallop may be confused with an opening snap of the mitral or tricuspid valve. If the differential diagnosis cannot be made by auscultation from the quality of the sound, the phonocardiogram alone or in combination with an apex kinetogram or jugular phlebogram should solve the problem.

*Fourth Heart Sound:* The fourth heart sound is produced during atrial contraction at the end of diastole and therefore it pre-



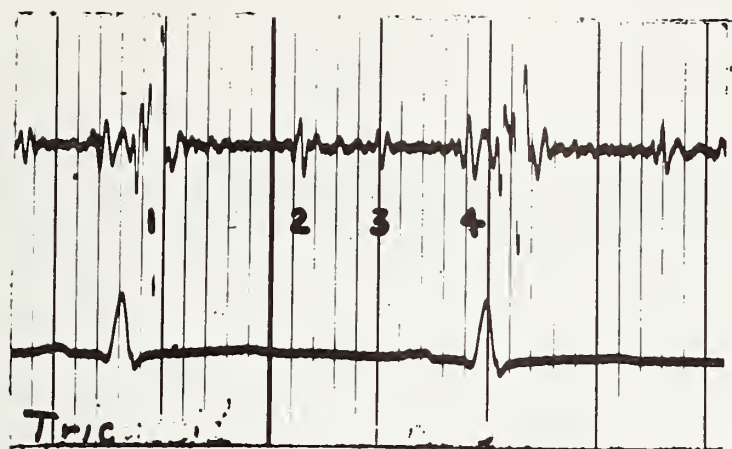


Figure 3

cedes the first sound (figure 3). Like the third heart sound it too is lowpitched and of low intensity, and heard best along the left sternal border. Careful auscultation in normal children occasionally reveals a fourth heart sound but its presence in adults is always pathological. When abnormally present, a fourth heart sound indicates increased resistance to ventricular filling and strongly suggests ventricular hypertrophy. It is then called atrial gallop. Thus, a left atrial gallop may be present in systemic hypertension, aortic valvular or sub-valvular stenosis cardiomyopathies, etc. and a right one in pulmonary valvular or infundibular stenosis, pulmonary hypertension, etc. An atrial sound is usually heard in abnormally prolonged atrioventricular conduction or dissociation. The differential diagnosis of the atrial gallop includes splitting of the first heart sound, the ejection sound and the pre-systolic murmur.

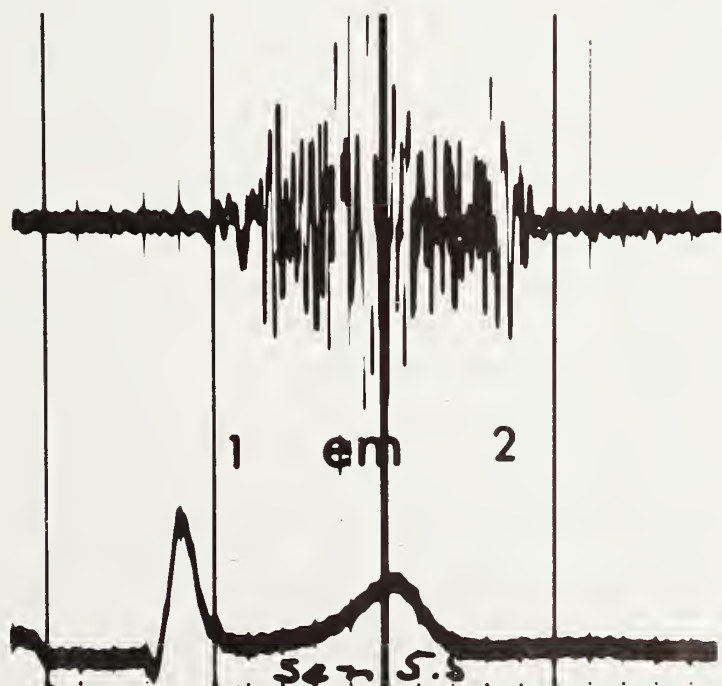


Figure 4

The mechanism of the production of the third heart sound is not completely understood. The oldest and still prevailing theory claims that the sound is due to vibrations generated at the ventricular wall during the rapid filling period of diastole. More recently, this theory has been challenged by a theory that ascribes the sound to the motion of the atrioventricular valves.

The term triple rhythm implies the presence of the third or fourth heart sound. When both filling sounds are audible, the rhythm becomes quadruple. In tachycardias, if both sounds are present, they occur nearly simultaneously due to abbreviated diastole, giving rise to a loud sound known as summation gallop.

## THE MURMURS

There are three main categories of murmurs based on their timing in the cardiac cycle: A. The Systolic Murmurs, B. Diastolic Murmurs, and C. Continuous Murmurs.

### *The Systolic Murmurs*

The systolic murmurs are further divided in: A. Midsystolic Murmurs (Ejection), B. Pansystolic Murmurs (Regurgitant), C. Early Systolic Murmurs, and D. Late Systolic Murmurs.

*The Midsystolic Murmur:* The midsystolic or ejection murmur begins with the opening of the semilunar valves and terminates with their closing. There is an interval of silence between the first sound and the onset of the murmur corresponding to the isometric contraction of the ventricles. As ventricular contraction continues and the intraventricular pressure exceeds that of the great vessels, the semilunar valves open with ejection of flow and consequently the murmur begins. The intensity of the murmur is low at its onset, increases to a maximum in mid-systole, decreases thereafter and finally ceases before or at the time the semilunar valves close. Thus, a graphic representation of the ejection murmur is that of a diamond shape whose onset and crescendo depends on the resistance offered at the appropriate valve (figure 4).

The intensity of the ejection murmur depends on and therefore can serve as an index of the severity of the stenosis, as long as blood flow through the valve is maintained



adequately. Similarly, the duration and the frequency of the murmur increase and its crescendo occurs near the second sound as the severity of the stenosis progresses.

The ejection murmur of aortic valvular stenosis is heard at the aortic valve area and along the left sternal border and radiates into the neck vessels. When stenosis is hemodynamically significant, the murmur is of grade III-VI and it is accompanied by a thrill felt best at the area of maximum intensity of the murmur. Other findings however, such as the quality of the second sound, the presence of an atrial gallop or ejection sound and the indirect carotid arteriogram indicate the severity of the disease.

The murmur of pulmonary stenosis, whether valvular or infundibular, is identical to the murmur of aortic stenosis with respect to frequency, intensity and quality, except that it is audible over the second left intercostal space. The murmur is louder and longer in duration, and it envelops the aortic component of the second sound as the degree of stenosis increases.

The presence of an ejection murmur does not always indicate stenosis. Such a murmur is present whenever the rate of ejection of blood through the semilunar valves is increased while their cross-sectional area remains normal. Accordingly, a pulmonary ejection murmur is present in atrial and ventricular septal defects in anomalous pulmonary venous return, regurgitation of the pulmonary valve, dilation of the pulmonary artery and in high output states. Similarly, an aortic ejection murmur is heard in aortic valve regurgitation, systemic hypertension, dilation of the ascending aorta, coarctation of the aorta and high output states.

**Pansystolic Murmurs:** In contrast to the midsystolic murmur of semilunar valve stenosis, the murmur of A-V valve regurgitation is a pansystolic one. It is caused by the abnormal flow of blood from a chamber of high pressure to a chamber of low pressure. As the name implies, the pansystolic murmur occurs throughout the entire systole beginning simultaneously with the first sound and terminating after the second sound. This is because the pressure within the ventricle at any time during ventricular contraction is greater than the pressure in the atrium,

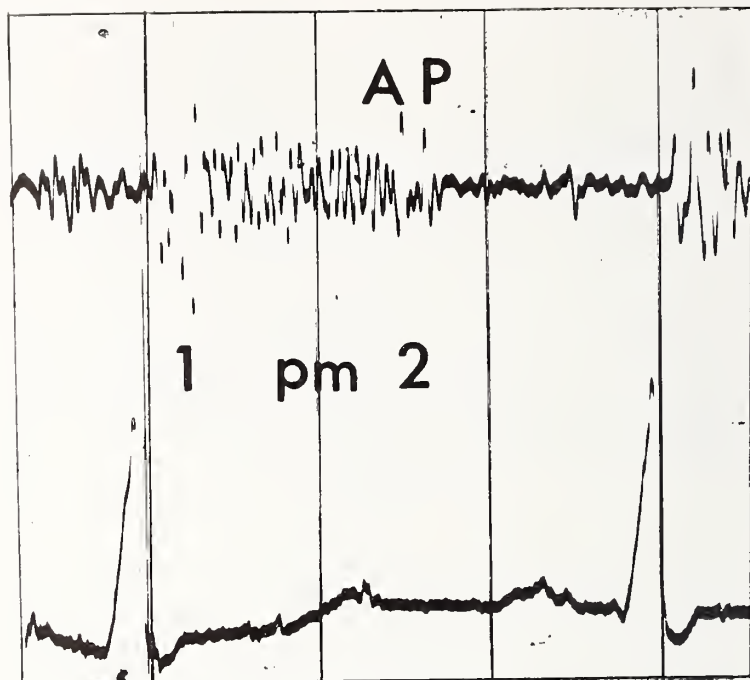


Figure 5

causing continuous flow and therefore a murmur throughout the entire systole (figure 5).

The amplitude of the pansystolic murmur is relatively constant and its intensity varies with the degree of regurgitation.

The pansystolic murmur of mitral insufficiency, whether of organic origin or due to dilation of the valvular ring is heard over the apex, radiates to the axilla and infra-scapular area and becomes louder during expiration.

When mitral insufficiency is hemodynamically significant, the murmur is of grade III intensity or more and is accompanied by a thrill. In addition to the intensity of the murmur, the presence of a filling sound (ventricular gallop), a filling murmur (see diastolic murmurs) and wide splitting of the second sound indicate severe mitral regurgitation.

In insufficiency of the tricuspid valve, the auscultatory findings resemble mitral valve incompetence except that the murmur is mainly localized over the area toward the xiphoid process of the sternum and becomes louder during inspiration.

The murmur of a ventricular septal defect is likewise pansystolic, due to the continuous flow of blood from the left to the right ventricle throughout systole. It is best heard at the fourth left intercostal space and has no significant radiation. The intensity of the murmur ranges from grade III-V and bears no direct relation to the magnitude of the shunt. Indeed very loud mur-



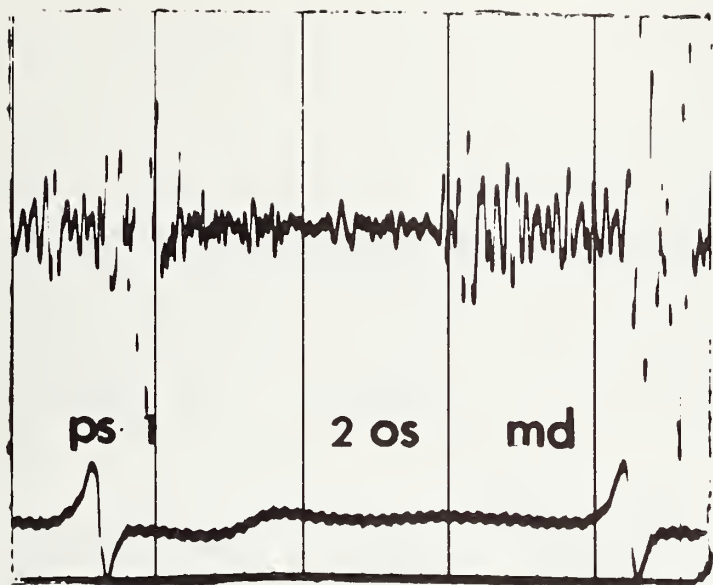


Figure 6

murs may be heard in the so called "maladie de Roger" in which a small septal defect is usually found high in the muscular area of the septum rather than in the membranous part.

*The Early Systolic Murmur:* There are occasional patients with a loud systolic murmur limited to early systole. No hemodynamic disturbance or shunts can be demonstrated, but angiography has shown small defects at the muscular ventricular septum. This early murmur is apparently due to closure of the defect and ceasing of flow when the ventricle is fully contracted.

*The Late Systolic Murmur:* The late systolic murmur begins in midsystole or later. Its intensity increases towards the second sound which it usually envelops. This type of murmur is audible in coarctation of the aorta where there is frequently a definite diastolic component. It is occasionally present in mitral valve regurgitation but rarely in normal subjects.

Indicative of hypertrophic subaortic stenosis is a late systolic murmur whose crescendo occurs near the second sound and whose intensity increases along the left sternal border towards the apex but is not transmitted to the neck vessels. The late onset of this murmur is attributed to the fact that the blood flow is not impeded during the early portion of the ejection phase of systole in this disorder. It now is considered probable that the late systolic murmur in this abnormality is due to mitral valve regurgitation rather than subvalvular stenosis. The presence of an atrial gallop and a normal second sound, coupled with an abnormally

steep upstroke of the indirect carotid arteriogram, confirms the diagnosis.

#### *Diastolic Murmurs*

The diastolic murmurs may be divided according to their timing: A. Ventricular filling or Mid-diastolic Murmurs, B. Atrial Systolic or Presystolic or in late Diastolic Murmurs, C. Regurgitant or Early Diastolic Murmurs.

*The Ventricular Filling Murmur:* The ventricular filling murmur begins after the second sound, when the ventricular pressure has fallen below the atrial pressure. The onset of the murmur varies with the degree of atrioventricular pressure gradient and this interval (between the second sound and the onset of the murmur) is responsible for the description of this murmur as mid-diastolic (figure 6).

The mid-diastolic murmur is the lowest in frequency (rumbling), presumably because of the small atrioventricular pressure differences and the low velocity. When an opening snap is present, there is a gap between this and the onset of the murmur, indicating that the opening snap is due to distention of the cusps before they open. The intensity of the murmur is not always indicative of the severity of stenosis because intensity depends on the magnitude of flow through the valve. Thus, in severe stenosis, the murmur may be absent. The duration of the murmur, however, always indicates a large atrioventricular pressure gradient, for severe stenosis must be accompanied by prolonged flow.

A low frequency mid-diastolic murmur characteristically is present in mitral stenosis. The murmur is audible over the apex and may be confined only over a very limited area. Careful search, therefore, is necessary. Frequently, the lateral recumbent or the knee-chest position intensifies or reveals the murmur.

The diagnosis of mitral valve stenosis should not be based on the murmur alone. Other auscultatory findings such as a loud first sound, an opening snap and a presystolic accentuation of the mid-diastolic murmur should be sought in order that the diagnosis may be established. When the stenosis becomes severe and flow through the mitral valve is severely reduced, the murmur becomes very faint and difficult to recognize. In addition, the opening snap may not be



heard, either because it is buried in the first sound, or because it is absent due to heavy calcification of the mitral leaflets.

Likewise in the presence of congestive heart failure, auricular fibrillation and other arrhythmias, many or all auscultatory findings of mitral stenosis may become faint or disappear completely. Under these circumstances, it is wise to defer diagnosis until compensation has taken place.

Aortic valve regurgitation alone may produce a mid-diastolic murmur. There may be a presystolic accentuation or actually the murmur may be purely presystolic. This murmur, known as the Austin-Flint murmur, is believed to be caused by the regurgitant jet of blood from the aorta, driving the aortic cusp of the mitral valve across the mitral orifice and thus making it vibrate to produce stenosis.

Mid-diastolic murmurs also occur when the flow of blood is increased through the atrioventricular valves. Large flows due to a ventricular septal defect or patent ductus arteriosus produce a mid-diastolic murmur at the mitral valve while large flows due to atrial septal defect and anomalous pulmonary venous return cause similar murmurs at the tricuspid valve. Likewise, such murmurs are usually present in atrioventricular valve regurgitation in high output states, and occasionally when the ventricles are dilated as with complete heart block or ventricular aneurysms.

A loud apical mid-diastolic murmur is often present in acute rheumatic carditis, known as the Carey-Coombs murmur. Its mechanism is not well understood but it is believed to be caused by changes in flow during the rapid filling phase resulting from transient deformity of the mitral leaflets, coexistent mitral regurgitation, or the high output state associated with acute rheumatic fever.

*The Presystolic Murmur* (figure 6): The late diastolic or presystolic murmur is caused by an increase in the velocity of blood flow through the abnormal A-V valves due to vigorous contraction of the atrium. It is crescendo-decrescendo in character and graphically resembles ejection murmur. The presystolic murmur is diagnostic of A-V valve stenosis, although occasionally it may

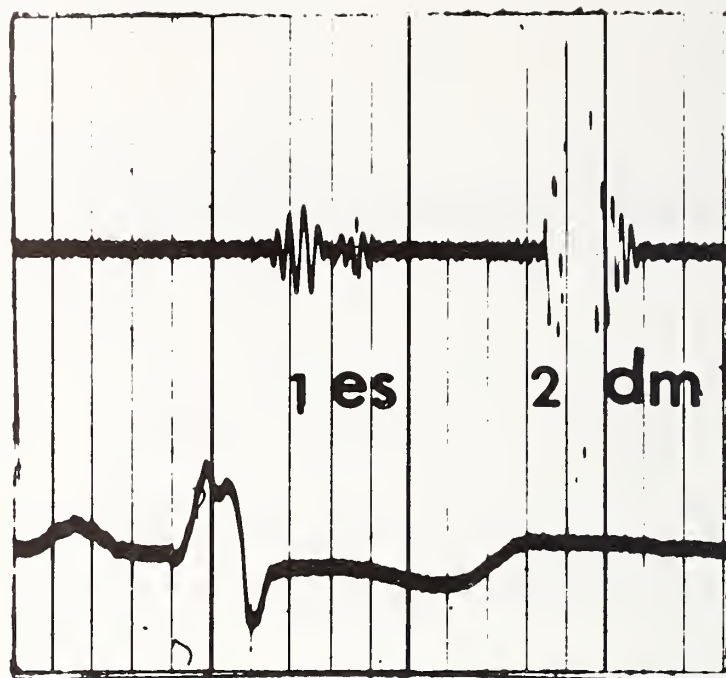


Figure 7

be heard in large L-R shunts. When not preceded by a mid-diastolic rumble, such a murmur indicates that the valvular stenosis is too limited to impede flow during passive ventricular filling. Due to its short duration and its proximity to the first sound, one should be careful not to mistake the presystolic murmur for an atrial sound or splitting of the first sound. For the same reasons, it is unwise to diagnose A-V valve stenosis on the basis of an atrial systolic murmur alone.

*The Early Diastolic Murmur:* Early diastolic murmurs are due to regurgitation of the semilunar valves. The murmur starts with the closure of the valves and usually reaches maximum intensity after the second sound when the ventricular pressure is almost zero and the pressure in the great vessels is still maximal. The intensity of the murmur then diminishes as the pressure falls in the aorta and pulmonary artery (figure 7).

Early diastolic murmurs have the highest frequency of all murmurs. This is attributed to the relatively small regurgitant volume which, under the high pressure of the great vessels, is being imparted a high velocity, thus generating high frequency noise. Its intensity varies, since there is no relationship to the severity of the disorder. Generally however, low frequency murmurs are associated with severe degrees of insufficiency.

In aortic valve regurgitation due to rheumatic fever, bacterial endocarditis and congenital fenestration of the aortic cusps, the early diastolic murmur is heard typically



over the aortic valve and is well transmitted along the left sternal border.

When aortic valve regurgitation is due primarily to dilatation of the aortic valve ring or ascending aorta, as in rheumatoid and syphilitic aortitis, Marfan's Syndrome, dissecting aneurysm, aneurysm of Valsalva's sinuses, trauma, hypertension, medionecrosis and idiopathic dilation of the aorta, the murmur is transmitted best along the right side of the sternum, particularly in the third and fourth intercostal space.

Pulmonary insufficiency is almost invariably secondary to pulmonary hypertension. The early diastolic murmur of this disorder, known as Graham Steell murmur is identical with the murmur of aortic regurgitation, but it is sharply localized over the left second or third intercostal space. The pulmonary component of the second sound is loud. Both an ejection sound and a midsystolic murmur are frequently present but these do not imply coexistent organic stenosis.

Rarely when anatomic abnormality of the pulmonary valve leaflets is the cause of regurgitation, the diastolic murmur is of low pitch and shorter duration, assuming a crescendo-decrescendo configuration. The sec-

ond sound is of normal or lower intensity, since pulmonary hypertension is not present.

#### *Continuous Murmurs*

Continuous murmurs occur both in systole and diastole. They are produced as blood flows from a high to a low pressure area and since the pressure gradient is maximum during systole, the intensity of the murmur is maximal in this phase.

Uncomplicated patent ductus arteriosus produces a typical continuous murmur due to flow of blood through the ductus from the aorta to the pulmonary artery. The murmur is heard as machinery noise throughout the cardiac cycle, at the second left intercostal space and infrascapular area.

A continuous murmur also is present in aorticopulmonary window and in other less common disorders, such as coronary arteriovenous fistuli, distal stenosis of the pulmonary artery, ruptured aneurysm of sinus of Valsalva, pulmonary arteriovenous fistuli, peripheral arteriovenous fistuli and finally, in surgical shunts. □

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## **SYMPOSIUM on EXERCISE and the HEART**

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# The Radiologic Examination of the Heart

PAUL C. HOUK, M.D.

*This article covers some of the important radiologic findings in patients with cardiac disease with special reference to changes in the pulmonary vasculature.*

**RADIOLOGIC EXAMINATION** of the heart and lungs comprises an essential part of the physical examination of a patient; therefore, interpretation of the roentgenograms should be approached in the same manner as other aspects of the physical examination. The physician carrying out the physical examination is in the best position to properly utilize the chest roentgenogram. Just as one looks diligently for those physical findings most helpful in the differential diagnosis in the patient, the physician must examine the chest roentgenogram for those anatomic features which will assist in the diagnosis. It is important to check the validity of the physical findings by detailed comparison with the chest film, as well as to detect lesions not previously suspected from the history and physical examination.

The most helpful component of the radiologic examination, as it applies to the routine differential diagnosis of cardiac disease,

is the routine 72 inch posteroanterior projection. Additional, and at times crucial, information is provided by the lateral and oblique views with a barium swallow. The films must be of maximum quality to be helpful.

The distinctive radiologic features of chamber enlargement will not be dealt with here as they are available in texts dealing with the radiographic examination of the heart. It is of vital importance, however, for all physicians to be aware of these features as the determination of chamber enlargement fits logically into the differential diagnosis. The chamber subjected to an increased work load will dilate as does a chamber damaged by disease. The atria, for example, are enlarged commonly when ventricular hypertrophy is present or when there is stenosis or insufficiency of the atrio-ventricular valves. It should be noted that an enlarged ventricle can cause the displacement either forward or backward of its counterpart; thus the left ventricle will project over the spine in the left anterior oblique projection in right ventricular enlargement, and the right ventricle will be displaced forward on the roentgenogram with left ventricular enlargement. The physician responsible for the patient should be prepared to interpret the electrocardiogram and the pertinent physical findings to avoid a misdiagnosis in the above instances.

The demonstration of physiologic alterations in the pulmonary circulation is perhaps the most important contribution of the

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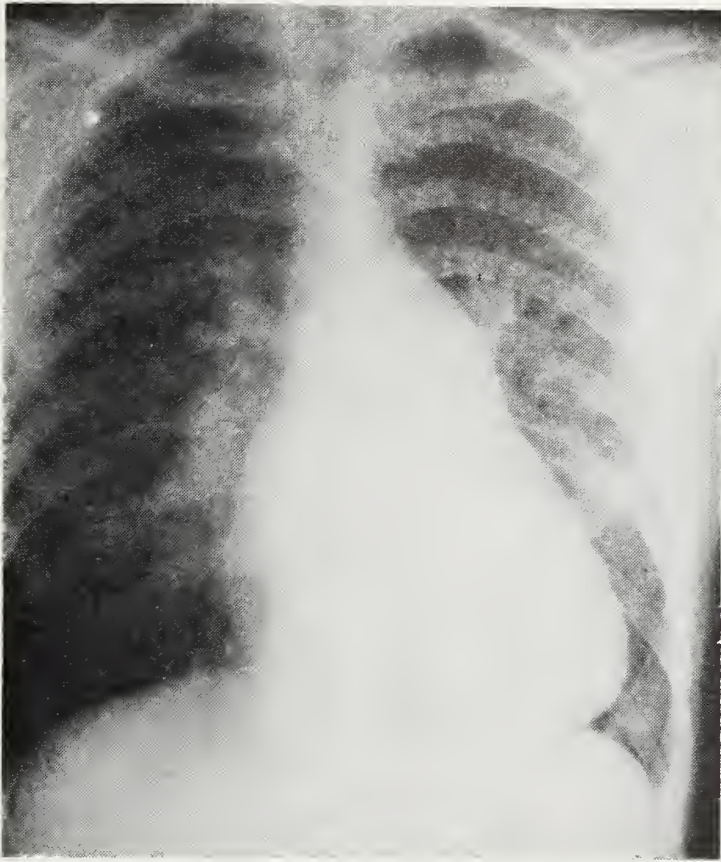


Figure 1. Patient with atrial septal defect with a pulmonary flow to systemic flow ratio of 4.4 to 1. Note the enlarged pulmonary conus and the enlargement of both pulmonary arteries and veins throughout both lung fields.

radiologic examination of the cardiac patient. The proper interpretation of the pulmonary vascular markings is essential to making the correct diagnosis. The vascular shadows in the normal posteroanterior chest film are produced by the pulmonary arteries and veins as they leave the hilum of the chest. The lower two-thirds of the hilar shadow is produced by the pulmonary arteries while the superior one-third is produced by the superior pulmonary veins. The veins in the lower portions of the lung fields are more horizontal to the heart and medial to the arteries.

From the examination of the posteroanterior chest film, we must determine whether or not pulmonary hypertension is present. If it is, pulmonary venous hypertension must be distinguished from pulmonary arterial hypertension, or the existence of both identified. Pulmonary arterial hypertension due to increased pulmonary flow must be differentiated from pulmonary hypertension resulting from obstructive disease of the small arteries or from vasoconstriction of medium sized and small branches of the pulmonary artery. The roentgenographic signs of increased pulmonary blood flow must be recog-

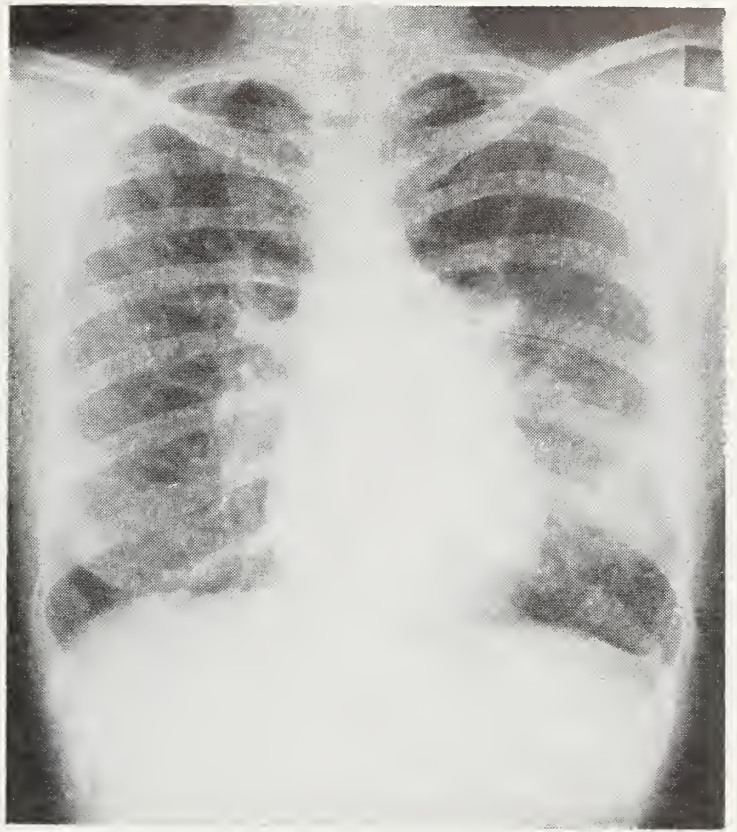


Figure 2. Patient with primary pulmonary hypertension. Note the greatly enlarged pulmonary conus, the enlarged root shadows, and the loss of peripheral arterial markings.

nized and decreased pulmonary vascular flow must be differentiated from that of normal flow. Increased pulmonary blood flow up to that of twice normal results in expansion of the pulmonary arteries without major increases in pulmonary arterial pressure due to the great distensibility of the pulmonary arterial bed. Further increases in pulmonary arterial flow result in pressure increases without appreciably changing pulmonary vascular resistance, unless active vasoconstriction or anatomical obstruction occurs. When either of these factors is present, the lumen of the intermediate and small vessels become smaller, and their size decreases on the roentgenogram. As a consequence, pulmonary blood flow decreases, and a shunt, if present, may be reversed.

The root shadows in pulmonary arterial hypertension are large and clearly defined shadows, due to dilatation of the main pulmonary arteries. Figure 1 demonstrates the

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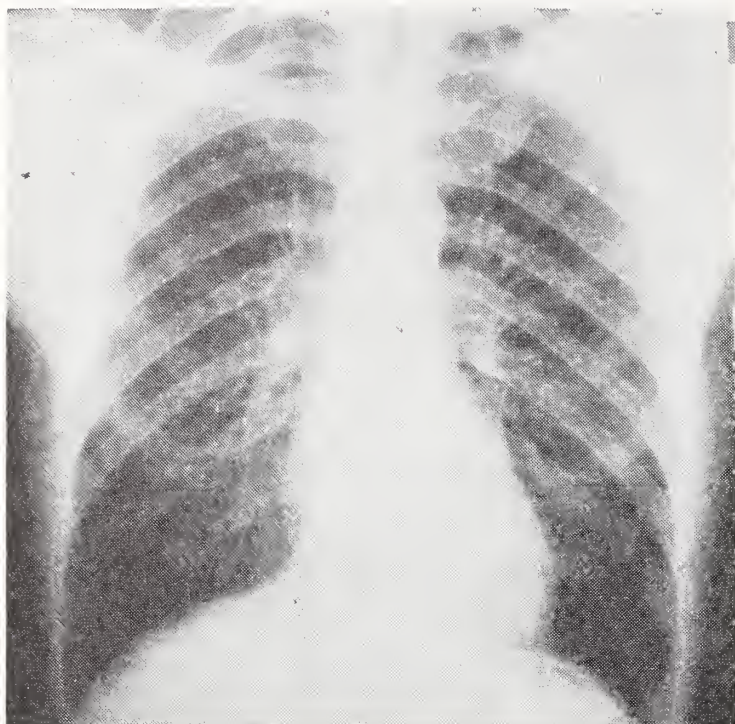


Figure 3. Patient with mitral valvular stenosis and chronic pulmonary venous hypertension. Note the enlarged left atrium and the redistribution of blood into the superior pulmonary veins with constriction of the vascular shadows in the lower lobes.

increase in size of the medium and small vessels in the lobar and segmental areas when pulmonary arterial hypertension is due to increased flow, as in a left to right shunt. The peripheral vessels tend to dilate with increased pulmonary flow; whereas in

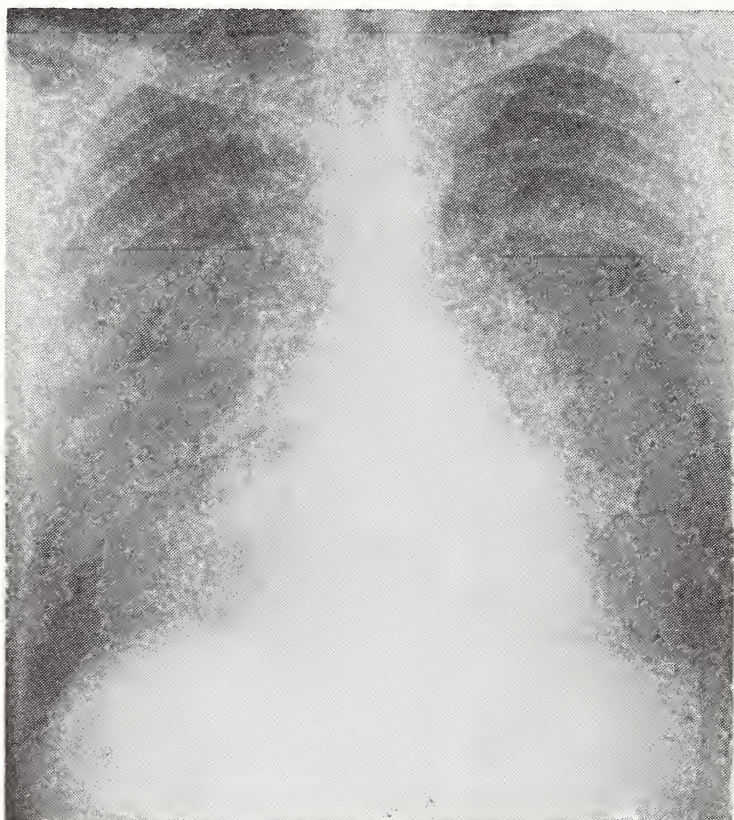


Figure 4. Patient with pheochromocytoma and acute alveolar pulmonary edema. Note the bilateral confluent densities in the central lung fields.

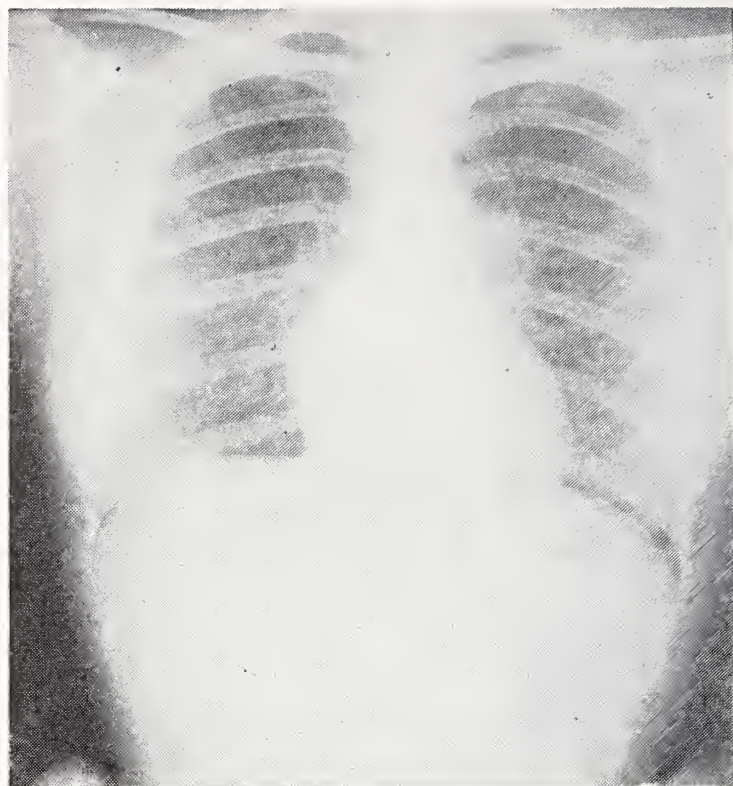


Figure 5. Patient with pulmonary valvular stenosis. Note the poststenotic dilatation of the pulmonary artery and the decreased pulmonary vascular markings secondary to decreased pulmonary blood flow.

pulmonary hypertension with decreased blood flow, these vessels become less apparent on roentgenograms and the peripheral lung fields become radiotranslucent as seen in figure 2.

Pulmonary venous hypertension is that state in which the pulmonary venous pressure is elevated, pulmonary vascular resistance is normal or slightly increased, and any pulmonary arterial hypertension is passive in order to maintain a normal pulmonary pressure gradient. In pulmonary venous hypertension, the root shadows in the hilar area are larger and more dense than normal and less distinct than in pulmonary arterial hypertension. These changes are due to enlargement of the superior and inferior pulmonary veins and their primary branches.

In more chronic forms of pulmonary venous hypertension, such as mitral valvular stenosis or chronic left ventricular failure, in which the mean left atrial pressures exceed 15 to 16 mm Hg at rest, the superior pulmonary veins become dilated and the inferior veins constricted. This redistribution of flow in the lungs results in the antler pattern frequently seen in patients with mitral stenosis and is shown in figure 3.

Pulmonary edema is of two types. Interstitial pulmonary edema is seen in chronic elevation of mean left atrial and pulmonary



venous pressures. This interstitial accumulation of fluid results in several roentgenographic changes. The changes are best seen in the dependent portions of the lung in the upright position due to higher capillary pressures. Fluid collection in the interlobular septa results in the appearance of transverse septal lines. The lung fields become more opaque.

Alveolar pulmonary edema occurs most frequently as an acute event and consists of bilateral confluent densities in the central lung fields. These changes may appear and disappear quickly on the chest roentgenogram as compared to the majority of the changes seen in interstitial pulmonary edema. Figure 4 demonstrates the changes seen in alveolar pulmonary edema.

Decreased pulmonary blood flow occurs in patients with pulmonary stenosis. In patients with pulmonary valvular stenosis, there is poststenotic dilation of the pulmonary artery which varies with the severity of the stenosis. In infundibular ste-

nosis, the hilar vessels are small, and poststenotic dilation is usually absent. The changes in peripheral vessels also vary with the degree of the stenosis. They tend to be thin and narrow and lead to increased translucency of the lung fields. Figure 5 demonstrates the changes of decreased pulmonary flow.

In summary, the radiologic examination is an integral portion of the physical examination of the patient with suspected cardiac disease. It is best interpreted by the physician most familiar with the patient and his physical findings. The most helpful component of the radiologic examination and formulation of the patient remains the posteroanterior chest roentgenogram and the lateral and oblique views with the barium swallow. □

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**March 5 ULCERATIVE COLITIS (60 Min)**  
Campbell Moses, M.D. — Host  
Director, Postgraduate Medicine  
University of Pittsburgh School of Medicine  
Robert Chamovitz, M.D.

**March 12 FANTASIES AND CHILDREN (60 Min)**  
Campbell Moses, M.D. — Host  
Director, Postgraduate Medicine  
University of Pittsburgh School of Medicine  
Helen Ross  
Marita Kenna, M.D.  
Ray S. Greco, M.D.  
Productions from the University of Western Ontario, Faculty of Medicine

**March 19 USE AND ABUSE OF THE X-RAY DEPARTMENT (30 Min)**  
Gerald G. Copestake, M.D., Professor of Diagnostic Radiology  
University of Western Ontario

**March 26 CHROMOSOMES AND THE PRACTITIONER (30 Min)**  
Murray L. Barr, M.D., Professor of Anatomy  
David H. Carr, M.D., Associate Professor of Anatomy  
Howard G. Valentine, M.D.  
University of Western Ontario  
Productions from the University of California, Los Angeles



# The Electrocardiogram in Appraisal of Patients with Heart Disease

JOHN M. KALBFLEISCH, M.D.

*Proper interpretation of the electrocardiogram provides a simple but valuable diagnostic tool for patient evaluation. Often the information cannot be obtained by other means and it may have prognostic significance.*

THE ELECTROCARDIOGRAM is an essential tool for proper evaluation of clinical cardiology problems. It has become an indispensable partner to the history, physical and roentgen examinations. Like its counterparts the electrocardiogram often yields information which cannot be obtained by other means.

Too much emphasis may be placed on an electrocardiographic diagnosis to the extreme detriment of the patient. The same electrocardiographic diagnosis may have quite different connotations in various clinical settings. For example, the normal electrocardiogram of an infant would be quite abnormal for an adult. Hence, the electrocardiogram must be interpreted only in the context of a given clinical problem. The initial clinical diagnosis may be supported,

refuted or other possibilities may arise as the result of a properly interpreted electrocardiogram.

Also, it should be emphasized that a normal or nondiagnostic electrocardiogram may occur in the presence of significant heart disease. As is well known, the electrocardiogram consists of three separate complexes. The P wave, QRS complex and T wave correspond respectively to atrial depolarization, depolarization of the ventricles and repolarization of the ventricles. These complexes result from the summation of electrical activity of millions of single muscle fiber units. Inaccuracies of the electrocardiogram can be appreciated readily when it is recalled that physiological alterations do not necessarily produce electrical disturbances, and the surface electrocardiogram is considerably altered by body build. Nonetheless, the electrocardiogram is the single most useful instrument in the detection of heart disease.

## ATRIAL HYPERTROPHY

Several methods have been proposed for diagnosing atrial enlargement and none of them is completely reliable. The electrocardiographic diagnosis of left atrial hypertrophy is usually made when the P wave is broad and notched in leads I and II, and the ratio of P duration to the P-R interval is greater than 1.6, or the P wave in  $V_1$  is

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diphasic with a large terminal negative portion.

Finding left atrial hypertrophy on the electrocardiogram should alert the clinician to the probability of mitral valve or left ventricular disease. The electrocardiographic combination of right ventricular hypertrophy and left atrial hypertrophy is nearly always due to mitral stenosis. Correlation with the auscultatory findings and chest roentgenogram should reveal the probable cause of the atrial abnormality in most cases.

Right atrial hypertrophy is diagnosed when there are large peaked P waves of 2.5 mm or greater amplitude in leads II, III, and AVF or a large upright P wave in V<sub>1</sub>. Pulmonary or right ventricular hypertension of any cause may be responsible for such abnormalities as well as tricuspid valvular disease. Again, the electrocardiographic diagnosis must necessarily be utilized in the light of other clinical information.

#### VENTRICULAR HYPERTROPHY

The criteria for the electrocardiographic diagnosis of ventricular hypertrophy are based on a combination of an increase in amplitude of the precordial voltage, axis deviation and a delay of the intrinsicoid deflection. None of these criteria are perfect but an increase in voltage carries a higher degree of sensitivity while a delay in the intrinsicoid deflection is more specific but less sensitive.

Left ventricular enlargement due to any cause will be reflected by the electrocardiogram in the majority of instances. Occasionally an entirely normal electrocardiogram will be found in the presence of left ventricular hypertrophy. On the other hand, 15 to 20 per cent of patients whose electrocardiograms display LVH will demonstrate no other clinical abnormalities. A follow-up of such individuals has shown an increased risk to developing clinical coronary artery disease.

Right ventricular hypertrophy is not as accurately diagnosed by the electrocardiogram as is left ventricular hypertrophy. Particularly in adults the right ventricular forces are minimized by the larger left ventricle and bundle branch block may be the

only manifest abnormality. In this situation right ventricular hypertrophy may be recognized more readily by the presence of a left parasternal impulse or by roentgenogram of the chest.

#### BUNDLE BRANCH BLOCKS

Probably 95 per cent of the people with left bundle branch block have serious heart disease such as aortic valvular lesions, hypertension, coronary artery disease or a myocardial pathology. The presence of left bundle branch block usually precludes the electrocardiographic diagnosis of myocardial infarction and reliance must be placed on other clinical features such as the history and serum enzymes. Left bundle branch block usually causes paradoxical splitting of the second heart sound.

Right bundle branch block may not be accompanied by heart disease in 25 to 50 per cent of cases and especially in young people. Most cases with right bundle branch block due to organic heart disease are caused by coronary artery disease. It is also commonly due to hypertension, rheumatic, congenital and pulmonary heart disease. Clinically, right bundle branch block causes splitting of the first heart sound and a widened splitting of the second heart sound.

#### Q WAVE ABNORMALITIES

The electrocardiogram is diagnostic of acute myocardial infarction in about 80 per cent of the cases. Reasons for failure of the electrocardiogram to diagnose infarction include the occurrence of multiple infarctions;

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the infarct may be too small; left bundle branch block or other intraventricular conduction abnormalities may obscure changes; and the number and time sequence of electrocardiograms may be inadequate. Rarely myocardial diseases such as amyloidosis may cause an erroneous diagnosis of myocardial infarction. Nearly 20 percent of all myocardial infarctions will be diagnosed by the electrocardiogram alone because they occurred silently. Also, a recent review of electrocardiograms indicates nearly 12 percent with diagnostic changes of acute myocardial infarction will become normal or not diagnostic within a few weeks to six years later.<sup>1</sup> However, the disappearance of abnormal Q-deflections in the electrocardiogram was not associated with a better prognosis in these patients.

The electrocardiogram during the course of acute myocardial infarction also yields helpful prognostic information. A higher mortality is associated with various arrhythmias and conduction disturbances.<sup>2</sup> In addition, the mortality of those patients with peri-infarction block due to myocardial in-

farction is significantly worse the first year following infarction.<sup>3</sup>

## ST AND T-WAVE CHANGES

Transient displacement of the ST junction accompanies myocardial infarction as an injury potential which ordinarily regresses in four weeks or less. Injury potentials may be evident following acute pericarditis, acute cor pulmonale, or acute coronary insufficiency. A careful interpretation of the history, physical examination and chest roentgenogram are essential in the differential diagnosis.

Ventricular aneurysm formation may be suggested by the persistence of ST and T-wave changes several weeks following myocardial infarction. An abnormal precordial impulse or roentgenographic features of an aneurysm support this diagnosis.

Ventricular repolarization is easily altered by many factors such as smoking, position, eating, drinking cold water, anxiety, drugs, electrolyte changes, hyperthyroidism and hypothyroidism, hyperventilation, and many others. Consequently T-wave changes are a frequent source of misdiagnosis and must be

Table 1  
Electrocardiographic Classification of Some Heart Diseases  
(After L. L. Conrad)

LVH/LBBB, LAH	RVH/RBBB, LAH	Pulmonary Vascularity by roentgenogram
Aortic Stenosis Aortic Insufficiency Coarctation of Aorta Myocardial Pathy Hypertension Arteriosclerotic Heart Disease		Normal
	Mitral Stenosis	
	RVH/RBBB, RAH	
Patent Ductus Arteriosus Ventricular Septal Defect Endocardial Cushion Defects Mitral Insufficiency	PDA + Pulmonary Hypertension VSD + Pulmonary Hypertension Atrial Septal Defect Total Anomalous Pulmonary Veins Transposition without Pulmonary Stenosis Cor Pulmonale Idiopathic Pulmonary Hypertension	Increased
LVH/LBBB, RAH		
Tricuspid Stenosis	Pulmonary Stenosis Tetralogy of Fallot Transposition with Pulmonary Stenosis Ebstein's Anomaly	Decreased



interpreted only in the context of all clinical information. As an example the presence of T-wave changes and a to-fro precordial friction rub would be diagnostic of pericarditis.

The exercise electrocardiogram, although helpful, is subject to diagnostic pitfalls. Both false positive and false negative results occur with sufficient frequency to cause difficulty in the interpretation of results for a given individual. However, in population studies, minor T-wave changes as well as positive exercise electrocardiograms appear to be statistically significant in predicting a high incidence of subsequent clinical coronary artery disease.

ARRHYTHMIAS

The electrocardiogram constitutes the major instrument in the diagnosis of cardiac arrhythmias. At times special techniques such as an esophageal lead are necessary for accurate differentiation of some arrhythmias. Occasionally differentiation of supraventricular versus ventricular arrhythmias may be aided by careful evaluation of the venous pulse, blood pressure and heart sounds. The finding of irregular cannon waves, varying intensity of the first heart sound and varying systolic blood pressure favor ventricular tachycardia. Likewise complete heart block may be distinguished clinically from sinus bradycardia by the occurrence of irregular cannon waves and varying intensity of the first heart sound.

In acute myocardial infarction the occurrence of rhythm disturbances is common and has resulted in coronary care units for their detection, prevention and treatment. The use of mechanical pacemakers has become

routine in the treatment of symptomatic heart block. Pacemaker function can be assessed readily by the electrocardiogram. Nonetheless, serious arrhythmias such as complete heart block continue to carry an unfavorable prognosis. Additional modes of treatment are being investigated in various coronary care units to enhance survival in these poor risk patients.

INTEGRATION OF THE  
ELECTROCARDIOGRAM

Table 1 gives a categorization of various heart diseases and changes in pulmonary vascularity as demonstrated by roentgenography. A similar table could be constructed based on the history, palpation of the precordium, auscultation or hemodynamic changes. Such cataloguing is often helpful in recalling all the possibilities in a given clinical situation. Moreover, the relationship and application of clinical findings is easily appreciated.

SUMMARY

The usefulness and some of the pitfalls in the application of the electrocardiogram to clinical situations is reviewed. Although extremely valuable, the electrocardiogram must be interpreted only in relation to other clinical factors. □

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Continued from the cover

from the left ventricle and the pulmonary "wedge" position. Only the diastolic portion of the left ventricular pressure curve is shown. There is a 10 mm. Hg. diastolic pressure gradient. The middle panel is a precordial sound tracing. Note the opening snap of the mitral valve recorded 0.08 sec. after the second sound and the presystolic murmur. In addition, the first sound is accentuated.

The electrocardiogram, bottom tracing, shows a broad "p" wave indicating left atrial hypertrophy.

**Diagnosis: Mitral valve stenosis, mild.**

*John D. Kyriacopoulos, M.D.*



# The Hemodynamic Appraisal of the Patient with Cardiac Disease

JOHN NAUGHTON, M.D.

*Catheterization of the heart is a valuable diagnostic tool for confirming the severity of all forms of congenital and acquired cardiac disease.*

**DURING THE** nearly 40 years following Forssman's report<sup>1</sup> of successful placement of a catheter in the right atrium, many techniques of intravascular catheterization were developed.<sup>1</sup> The results included a greater appreciation of normal and abnormal cardiac physiology, the development of applied physiological techniques, and the enhancement of accurate and thorough diagnosis.

Cardiac catheterization is indicated for all patients<sup>2, 3</sup> who are candidates for cardiovascular surgery (table 1). A carefully performed preoperative study (1) substantiates the original clinical impression; (2) detects any additional abnormalities that may be present, and (3) helps prevent patients from undergoing an unwarranted thoracotomy. This investigation appears justified for patients with acquired cardiovascular disease of unknown severity and for patients with

Table 1

## Indications for Cardiac Catheterization

1. Confirm presence of surgically correctible cardiac disease
2. Identification of unsuspected associated lesions
3. Appraisal of the severity of acquired cardiac lesions
4. Evaluation of the surgical result
5. Diagnostic cardiac problems
6. Prevention of unjustifiable thoracotomy

undiagnosed cardiac lesions. Most patients who require study should expect at least two cardiac catheterizations, the first, before surgery and the second, following recovery. The initial procedure is designed to enhance diagnostic accuracy and to aid the surgeon, while the follow-up study is designed to evaluate the surgical result.

There are few contraindications to cardiac catheterization, and the necessity of the procedure is often determined by the severity of a patient's illness. Relative contraindications include: (1) severe idiopathic pulmonary hypertension; (2) active myocardial lesions (acute myocardial infarction, myocarditis); (3) repetitive life-threatening arrhythmias; and (4) complete heart block with Adams-Stokes seizures. All these conditions are associated with a high incidence of sudden death.

The morbidity of cardiac catheterization results from things such as paroxysmal arrhythmias, phlebitis, wound infection, arterial thrombosis at the arteriotomy site, knotting of the catheter or its fracture in a cardiac chamber, perforation of the myocardium and the intramyocardial injection of contrast

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Table 2	
Approaches to Cardiac Catheterization	
1. Right heart catheterization	
a. Cephalic vein	
b. Right femoral vein	
2. Left heart catheterization	
a. Retrograde left ventricular catheterization	
b. Transseptal catheterization of left atrium and left ventricle	
c. Transbronchial puncture of left atrium	
d. Percutaneous left ventricular puncture	
e. Suprasternal puncture of left atrium	
f. Posterior transthoracic puncture of left atrium	

material. The overall death rate associated with the procedure is in the range of 0.045 per cent. Death has resulted from improperly grounded equipment, fatal arrhythmias, myocardial infarction and sudden death of unknown etiology.

Evaluation before cardiac catheterization includes a history and physical examination, routine chest roentgenogram with cardiac series, electrocardiogram, phonocardiogram, apex kinetocardiogram, and pulmonary function studies. An adequate appraisal includes correlating the results of these tests with the findings from catheterization. An accurate appraisal of the effect of surgical intervention necessitates comparing the post-

Table 4	
Normal Values for Oxygen Content of Blood	
Superior Vena Cava	14.0 ± 1 ml/100 ml
Inferior Vena Cava	16.0 ± 1 ml/100 ml
Right Atrium (mid)	15.0 ± 1 ml/100 ml
Right Ventricle (mid)	15.2 ± 1 ml/100 ml
Brachial Artery	18.9 to 19.3 ml/100 ml
Arteriovenous Oxygen Difference	3 to 5 ml/100 ml
Oxygen Capacity, Arterial Blood	20.16 ml/100 ml

operative results of these studies with those recorded preoperatively.

The preparation of a patient for cardiac catheterization is enhanced if the physician is aware of the patient's anxiety related to the procedure. This is best alleviated by the referring physician initially, and by careful instruction of the patient by the investigator. Often anxiety can be reduced if the patient is taken to the laboratory the afternoon before catheterization for a "trial run."

A combination of Nembutal,<sup>®</sup> Phenergan<sup>®</sup> and Demerol<sup>®</sup> is usually administered one hour before catheterization. In our experience, the administration of Demerol<sup>®</sup> is associated with a high incidence of nausea and vomiting, but this has been lessened by using higher doses of Nembutal<sup>®</sup> without Demerol.<sup>®</sup> Since the procedure is performed

Table 3									Conditions Associated with Elevated Pressure
Intracardiac Pressures, mm Hg									
SITE	NORMAL			ABNORMAL					
	Systolic	Diastolic	Mean	Systolic	Diastolic	Mean			
RIGHT ATRIUM	4 to 6	—2 to +2	2 to 5	—	—	>10	1. Right ventricular failure 2. Tricuspid stenosis 3. Tricuspid insufficiency 4. Restricted ventricular filling a. Constrictive pericarditis b. Endocardial fibrosis c. Tachycardias		
RIGHT VENTRICLE	15 to 30	0 to 6	—	>30	>10	—	1. Pulmonary stenosis 2. Pulmonary hypertension 3. Right ventricular failure 4. Restricted diastolic filling		
PULMONARY ARTERY	15 to 30	7 to 12	11 to 18	>30	—	>20	1. Pulmonary hypertension		
PULMONARY CAPILLARY	—	—	5 to 10	—	—	>12	1. Mitral stenosis 2. Mitral insufficiency 3. Left ventricular failure 4. Restricted filling of left ven- tricle		
LEFT ATRIUM	—	—	5 to 10	—	—	>12	Same as pulmonary capillary		
LEFT VENTRICLE	—	5 to 12	—	—	>15	—	1. Aortic stenosis 2. Restricted filling of left ven- tricle		



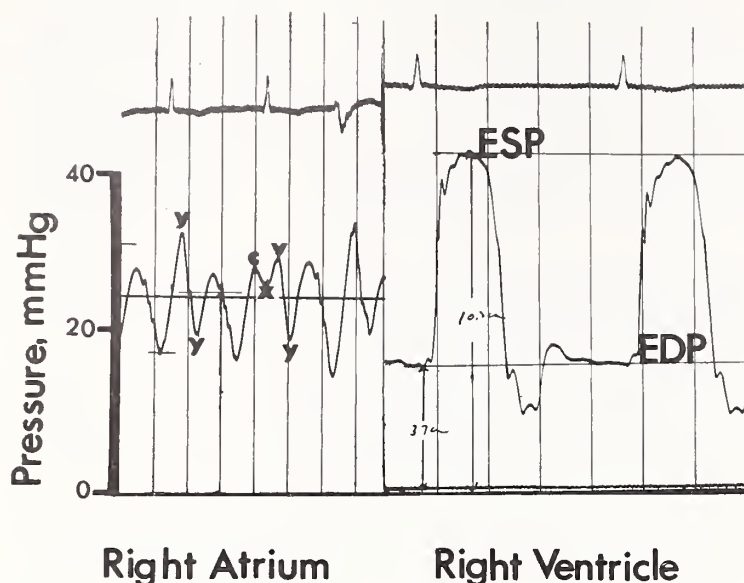


Figure 1. A record of the pressure tracing recorded from the right atrium and right ventricle of a patient with constrictive pericarditis. Atrial fibrillation was present. A plateaued, elevated end-diastolic pressure (EDP) was recorded following rapid ventricular filling. This type of plateau was once regarded as pathognomonic of constrictive pericarditis, but it is also recorded in patients with congestive heart failure and other forms of restrictive myocardial disease.

under local anesthesia, it is important for the physician to communicate with the patient throughout the procedure.

Many approaches to the heart have been devised and refined (table 2). In adults the right heart is usually approached from a right antecubital vein, while the right femoral vein is used most often in studying children. This procedure is indicated for patients with evidence of intracardiac shunts (atrial septal defect, ventricular septal defect, patent ductus arteriosus), pulmonary valvular or arterial disease, obstructive disease of the mitral valve (mitral stenosis),<sup>4</sup> or unexplained pulmonary hypertension. A complete evaluation usually includes documentation of the pressures in each of the cardiac chambers, the pulmonary artery, pulmonary artery wedge position, and aorta; (table 3); measurement of the oxygen content of blood in the vena cavae and cardiac chambers (table 4); determination of the cardiac output by either the Fick technique or dye dilution method; and selective angiocardiology.

An increased pulmonary artery wedge or capillary pressure is recorded in patients with obstructive lesions of the mitral valve

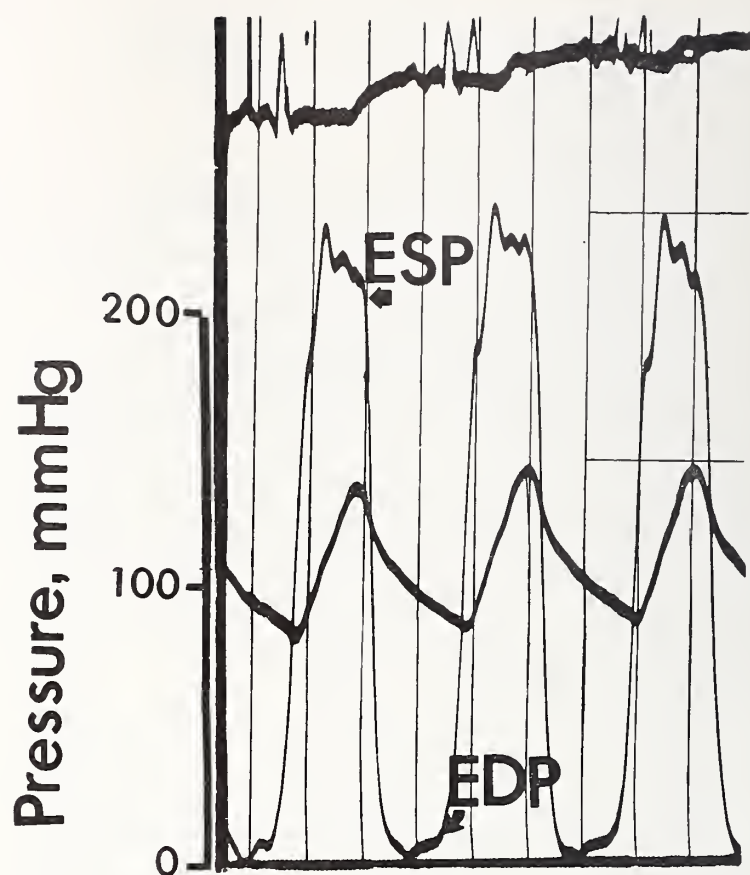


Figure 2. This tracing of the aortic and left ventricular pressure was recorded in a patient with acquired aortic stenosis of a rheumatic etiology. The left ventricular end-diastolic pressure (EDP) was not elevated. A 90 mm Hg gradient was measured between the end-systolic left ventricular pressure and the peak systolic aortic pressure. The systolic upstroke of the aortic pressure tracing was characteristic of valvular aortic stenosis.

and with left ventricular decompensation. A systolic pressure gradient across the pulmonic valve is recorded in patients with valvular pulmonic stenosis. The right ventricular pressure tracing may be useful in evaluating the adequacy of the right ventricular myocardium (figure 1), since end-diastolic pressure may be elevated as a result of myocardial failure, constrictive pericarditis, endocardial fibrosis or paroxysmal tachycardias. The latter three conditions represent instances of restriction to ventricular filling during diastole.

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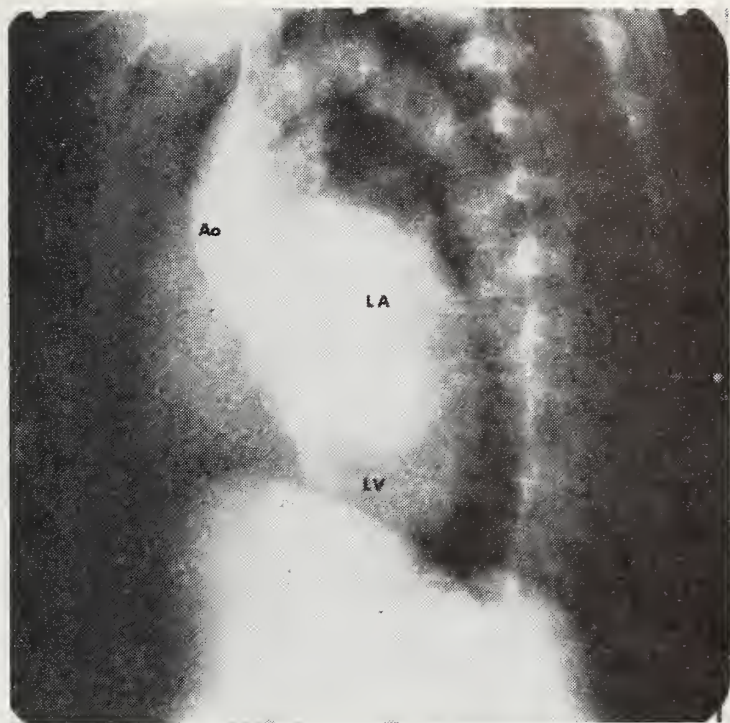


Figure 3. Contrast material was injected through a catheter placed in the left ventricle with the patient in a left anterior oblique position. Two seconds following injection the left atrium was completely opacified indicating the presence of severe mitral valvular regurgitation.

An increase in oxygen saturation of the venous blood is recorded at the level of a left-to-right shunt. Often the degree of shunting may be so small that this technique is not adequate for diagnosis, and a platinum catheter which senses the presence of administered hydrogen is used as an alternative diagnostic procedure. Right-to-left shunts are detected by measuring unsaturated systemic arterial blood. The correlation of cardiac output measurements with the oxygen content of mixed venous and arterial blood makes it possible to quantitate the blood flow through the pulmonary and the systemic circulations. The vascular resistance of the two circulatory circuits can be determined by calculating the relationship of the pressure gradient between cardiac chambers to the blood flow.

Of the approaches to the left ventricle, retrograde catheterization, percutaneous needle puncture of the left ventricle and transseptal catheterization are the most often used techniques. In the retrograde technique a catheter is inserted into a brachial artery either through a percutaneous needle puncture of the vessel or through an arteriotomy, and passed into the ascending aorta across the aortic valve into the left ventricle. A catheter is usually passed across

a diseased aortic valve in approximately two-thirds of the patients with acquired disease and in about 90 per cent of the patients with congenital lesions of the valve. Percutaneous puncture of the left ventricular chamber through the apex is indicated in those patients whose valve cannot be crossed, and in whom it is important to document the systolic pressure gradient and blood flow across the valve. The retrograde catheter is left in position above the aortic valve and simultaneous pressure measurements are recorded from both sides of the valve (figure 2). Selective angiocardiology of the left ventricle is often performed through the percutaneous needle.

The rate of pressure change per unit time ( $dp/dt$ ) is determined from the aortic pressure tracing, and its value is an index of the degree of obstruction to flow from the left side of the heart. Transseptal cardiac catheterization offers the advantage of studying the right and left sides of the heart from a single catheter inserted through percutaneous needle of the right femoral vein. Its disadvantages include: (1) the atrial septum is sometimes difficult to puncture; (2) the mitral valve cannot be crossed safely in patients with atrial thrombi.

Selective angiocardiology may be an essential part of many catheterization pro-

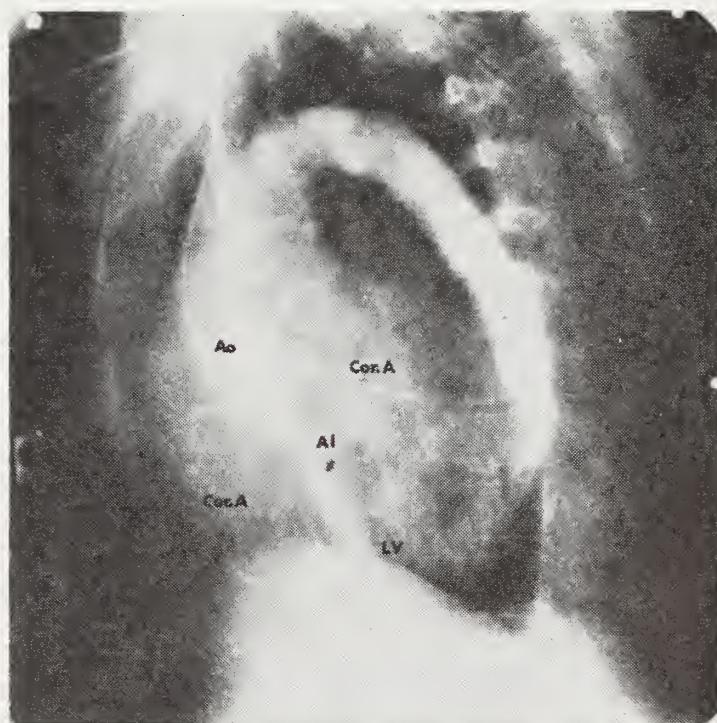


Figure 4. A radiopaque shadow was detected along the border of the intraventricular septum following injection of contrast material into the ascending aorta. This degree of opacification represents mild-to-moderate aortic valvular regurgitation.



cedures.<sup>5</sup> The injection of contrast material aids in determining cardiac chamber size (figure 3), the presence of valve deformity (figure 4), and the location of septal defects. In addition, this technique may be employed to: (1) distinguish aneurysms of the pulmonary artery and aorta from pulmonary and mediastinal tumors; (2) determine the nature of cardiac and paracardiac shadows; (3) differentiate cardiac enlargement from pericardial effusion; (4) diagnose suspected pulmonary arteriovenous fistula; and (5) evaluate the severity of coronary atherosclerosis. Selective coronary artery angiography is indicated for those patients whose manifest coronary artery disease progresses despite adequate medical

management and for patients with undiagnosed chest pain which may be of cardiac origin. Anatomic demonstration of coronary arterial disease also should be accompanied by measurements of coronary blood flow and of coronary sinus lactate levels. Alterations of the latter two measurements help determine whether a patient with coronary arterial disease has zonal myocardial ischemia which accounts for his symptoms. □

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## *Announcing* ANNUAL SPRING SYMPOSIA IN GYNECOLOGY AND OBSTETRICS MARCH 14th, 15th, 16th, 1968

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## Specialties Planned For Annual Meeting

Thirteen Oklahoma medical specialty societies are joining with the OSMA to plan the scientific sections of the OSMA Annual Meeting to be held May 16th through 18th in the Skirvin Hotel in Oklahoma City.

Planning for the '68 annual meeting started immediately after the Tulsa convention. At that time Richard B. Price, M.D., Chairman of the OSMA Annual Meeting Committee, wrote the presidents of the state specialty groups and asked for their cooperation in planning the scientific section meetings. A meeting of the presidents or their representatives was held in Oklahoma City in late August to start planning for the '68 meeting.

During the meeting all societies were asked to establish a committee within their own organizations to take the responsibility of contacting speakers and arranging for details connected with each section meeting.

In a recent interview Doctor Price stated, "The specialty societies responded with enthusiasm. We now have twelve scientific sections fully planned."

The twelve scientific sections for the 1968 meeting include the following: cardiovascular disease, dermatology, eye, ear, nose and throat, general practice, internal medicine, obstetrics and gynecology, orthopedics, pathology, pediatrics, psychiatry, radiology and surgery.

An extra feature of this year's annual meeting will be a half-day "forum on medicine and government." The forum, to be held on Saturday, May 18th, is designed to familiarize physicians with the operations of state government and the legislature. Chairman Price stated that the forum could be considered a scientific section due to its importance to Oklahoma physicians.

The OSMA Annual Meeting has four areas requiring intensive pre-planning. These include the scientific sections, the business meetings, the social functions, and the exhibits.

The business portion of the meeting will include a meeting of the OSMA Board of Trustees Thursday afternoon, May 16th, and meetings of the OSMA House of Delegates, Friday and Saturday mornings, May 17th and 18th.

During the two-day session the House of Delegates will elect new officers and will hear and consider committee recommendations and resolutions.

### Social Events

The social functions of the annual meeting will include a Champagne Party Thursday evening, a Gaslight Party Friday evening and the annual President's Inaugural Dinner-Dance Saturday evening.

The Thursday Champagne Party will be held in the Persian Room of the Skirvin Tower Hotel. Champagne and hors d'oeuvres will be served.

The Friday night Gaslight Party will feature entertainment from the famous Gaslight Club in Chicago. Four beautiful flappers and five great jazz musicians will fly to Oklahoma City from Chicago to furnish the entertainment for the meeting. Some of the outstanding moments will occur when members of the audience are brought onto the stage and taught by the girls to do the charleston and twist in the true Gaslight fashion.

The President's Inaugural Dinner-Dance will be held Saturday evening, May 18th, and will be preceded by a poolside cocktail party at the Skirvin's Sun Suite Club. The dinner will feature a special gourmet menu complete with wine for the inauguration of Scott Hendren, M.D., as President of the OSMA.

### Exhibits

The exhibits for the 1968 meeting will include booths for pharmaceutical companies, surgical supply houses, and products and other services of interest to physicians.

Ten booth spaces have been set aside for the scientific exhibits.

### Arrangements

Physicians and their families interested in attending the 62nd annual meeting should contact the Skirvin Hotel directly to make arrangements for rooms.

### Scientific Sections

The following scientific programs have been announced by the specialty societies for their section meetings during the OSMA Annual Meeting.

#### Dermatology

"Advances in Dermatology" will be the general topic for the section on dermatology. Guest speaker will be E. Richard Harrell, M.D., Professor and Chairman, Department of Dermatology, University of Michigan, Ann Arbor, Michigan. Augmenting the program will be Robert L. Olson, M.D., and Dennis A. Weigand, M.D., University of Oklahoma School of Medicine.

#### Eye, Ear, Nose and Throat

David Paton, M.D., Associate Professor of Ophthalmology, The Wilmer Institute, Johns Hopkins Hospital, Baltimore, Maryland, will highlight this program on "Recent Advances in Cornea Surgery." In addition, Roger E. Wehrs, M.D., Tulsa, will speak on "The Medical and Surgical Treatment of Serious Otitis Media" and "Experiences with Homograft Ossicles."

#### General Practice

This group will hear "Is Geriatrics Pounding At Your Door?" and "Granny's Herbs and the Witch Doctor" by C. Howard Ross, M.D., Past-President of the Michigan Academy of General Practice, Ann Arbor Michigan. "The Long-Term Management



of Obesity, a Chronic Disease" and "What's Your Question About Obesity?" will be presented by Irving B. Perlstein, M.D., Instructor in Medicine, University of Louisville School of Medicine, Louisville, Kentucky.

#### Internal Medicine

Peter J. Talso, M.D., Professor and Chairman, Department of Medicine, Stritch School of Medicine of Loyola University, Chicago, Illinois, will talk to the internists on "Remediable Hypertension" and Carroll M. Leevy, M.D., Professor and Director, Division of Hepatic Metabolism and Nutrition, New Jersey College of Medicine and Dentistry, Jersey City, New Jersey, will instruct the group on "Treatment and Reversibility of Chronic Liver Disease."

#### Obstetrics and Gynecology

Obstetricians and gynecologists will hear discussion on "Second Thoughts On Conception Control Measures" by Donald A. Goss, M.D., Professor and Chairman, Department of Obstetrics and Gynecology, Vanderbilt University School of Medicine, Nashville, Tennessee; Herbert W. Birch, M.D., Assistant Professor, Department of Obstetrics and Gynecology, Emory University School of Medicine, Atlanta, Georgia; and Robert Furman, M.D., University of Oklahoma School of Medicine.

#### Pathology

Guest speaker Russell J. Eilers, M.D., Director of Clinical Laboratories, University of Kansas Medical Center, Kansas City, Kansas; Tom S. Gafford, M.D., Muskogee, and Dale E. Van Wormer, Tulsa, will lead the pathologists in the discussion of "Quality Laboratory Medicine in the Physician's Office."

#### Pediatrics

This section will hear Paul E. Wehrle, M.D., Chief Physician, Children's Division, Pediatrics and Communicable Disease Services, Los Angeles County General Hospital, Los Angeles, California, talk on "The Current Status of Immunizing Agents

For Children and Adults." Dale C. Garell, M.D., Director, Division of Adolescent Medicine, Children's Hospital of Los Angeles, Los Angeles, California, will talk on "Practical Approaches to the Management of the Adolescent Age Patient."

#### Psychiatry

"Psychoactive Drugs in Medicine," is the general subject for the psychiatrists who will hear Arnold Mandell, M.D., Associate Professor of Psychiatry, University of the City of Los Angeles, Los Angeles, California. Three physicians from the University of Oklahoma School of Medicine who will appear during this meeting are: K. D. Charalampous, M.D., Boyd K. Lester, M.D., and L. J. West, M.D.

#### Surgery

The topic for discussion in this meeting will be "Progress in Pediatric Surgery." Speakers are E. Ide Smith, M.D., Surgeon-in-Chief, Children's Mercy Hospital, Kansas City, Missouri; Theodore P. Votteler, M.D., Director of General Surgery Service, Children's Medical Center, Dallas, Texas; John W. Richardson, Jr., M.D., and G. Rainey Williams, M.D., both of the University of Oklahoma School of Medicine. □

## DPW Cuts Back Physician Payments

The Oklahoma Welfare Commission made further physician cutbacks in the Title XIX Medicaid Program during its January meeting.

In a January 23rd letter, DPW Director Lloyd Rader, explained that the cutback was necessitated by a rapid exhaustion of welfare funds. From the period June, 1966 to June, 1967 the DPW expended 60½ million dollars for medical services. Of this amount some 11¼ million went for physicians payments. During the first six months of the current fiscal year, the rate of expenditures has been even higher.

The latest cutback affects welfare recipient patients between the ages of 21 and 65. These are as follows: (1) payment for physician services, other than inpatient hospital care,

will be limited to the direct physician's services provided to the patient, except for x-rays taken within 24 hours following an accident and directly connected therewith.

This excludes all diagnostic x-rays, other than stated above, laboratory work, tissue examinations, electrocardiograms, any form of physical therapy and all other ancillary services.

(2) The period of compensable hospitalization, effective February 1st, 1968, for public assistance and medical assistance recipients between the ages of 21 and 65 (Medicaid) is limited to a maximum not to exceed 12 days, with a possible compensable extension not to exceed 12 days, per single admission. If a claim for hospital care includes services beyond the first 12 days, the hospital claim must be accompanied by an indication of approval of the extension by the utilization review committee of the hospital.

These cutbacks were made at the recommendation of the DPW Advisory Committee on Medical Care for Public Assistance Recipients and are compatible with the policy of the Oklahoma State Medical Association. In July, 1966, the OSMA recommended that if a cutback was necessary it should be in the scope of the program rather than a reduction in the rate of compensation for covered services.

In a recent letter to all members of the OSMA, Maxwell A. Johnson, M.D., association president, stated, "It has been the policy of the Oklahoma State Medical Association that physicians should be paid the market value of the professional services under government health care programs. Moreover, when economies are necessary in order to balance available tax revenues with expenditures, the association has felt that the scope of the program should be curtailed rather than reducing the rate of compensation for covered services."

The president went on to state that the DPW's decision to reduce the scope of covered services is in keeping with the general policy of the medical association.



The latest DPW cutbacks do not affect the hospitalization period for persons under the age of 21.

Surgical procedures by physicians have also remained untouched. The charge made for surgical procedures includes both pre-operative and post-operative care.

In his January 23rd letter, Director Rader stated, "Based upon expenditures for the first six months of this fiscal year (July-December, 1967), the total cost of the (Title XIX Medicaid) program continues to increase, due to continued rise in utilization and charges for the unit's service rendered, both inpatient and outpatient. This continued increase is true in all facets of the medical care program with the exception of nursing care in the recipient's own home."

Director Rader pointed out that part of the difficulty was caused by a requirement that Title XIX programs be "comparable in scope and duration to Title XVIII programs." He said, "requirement of comparable medical benefits has proven to be more than many states could finance. In the enactment of the social security amendments of 1967, the Congress removed the comparability requirement, thus permitting a state to adjust the scope of its medical care program within the amount of state funds available. As much as we regret the situation, we find

the Department of Public Welfare to be in the position, financially, that the scope of its medical care program (Medicaid) must be reduced."

## Surgeons To Meet In Oklahoma City

The second annual postgraduate course in sports medicine sponsored in Oklahoma City by the American Academy of Orthopaedic Surgeons will be held July 29th-30th-31st at the Skirvin Hotel.

The three-day course of lectures and audio-visual demonstrations is directed toward orthopaedic surgeons. General physicians, high school and college team physicians, and others with a medical interest in care of the athlete will be eligible to attend. It is to be sponsored by the Academy's Committee on Sports Medicine in cooperation with the Department of Orthopaedic and Fracture Surgery, University of Oklahoma School of Medicine, Oklahoma City.

Chairman of the course is Doctor Don H. O'Donoghue, Chairman of the Orthopaedic and Fracture Surgery Department at the medical school. The faculty is composed of distinguished lecturers from many states and Canada as well as members of the university staff.

Lecturers will discuss in depth

topics including ski injuries, condition of the ankle and mid-foot, track and field problems and injuries to the knee and leg.

For application forms and further information, physicians are asked to write to Doctor O'Donoghue, 1111 North Lee Street, Oklahoma City, Oklahoma 73103, or to the American Academy of Orthopaedic Surgeons, 29 East Madison Street, Chicago, Illinois 60602. The course is approved for 22½ hours of credit by the American Academy of General Practice.

## Pediatric Chair Filled By Tennessee Physician

Richard Lee Austin, M.D., pediatrician of the University of Tennessee College of Medicine, has joined the University of Oklahoma Medical Center faculty as the first appointee to a pediatric chair endowed by the late Mrs. Anna M. Sprague of Fairview.

Mrs. Sprague, who died in 1963 at the age of 86, left \$57,000 to Children's Memorial Hospital to establish a teaching chair in the field of children's diseases.

Doctor Austin, 45, received an M.D. at Vanderbilt University School of Medicine in 1947. He took his specialty training in pediatrics at the University Hospitals in Cleveland, Ohio, and the East Bay Children's Hospital, Oakland, California.



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## Stokes Named Task Force Head

Harl Stokes, Executive Director of the Oklahoma Chapter of the American Academy of General Practice, has been named to head the Health Economic Survey Task Force.

The task force was an outgrowth of a 1965 decision by the OSMA House of Delegates to initiate a major health economic survey in Oklahoma. Governor Henry Bellmon made the activity a quasi-governmental project and appointed a task force to manage the survey. It consists of representatives from the OSMA, the hospital association, Blue Cross-Blue Shield, Oklahoma Osteopathic Association, labor and management organizations and the Oklahoma Farm Bureau.

The first concern of the task force was to complete the health economic survey. This phase was completed in August of 1966 and included (1) a survey of the extent of prepaid protection for the entire Oklahoma population, based upon income brackets and geographical areas; (2) a survey of the quality of prepaid protection for the entire population; (3) a public opinion survey regarding attitudes toward costs and benefits of prepaid coverage; (4) a professional opinion survey regarding product design of prepayment plans.

The survey, along with recommendations from the task force, was presented to the OSMA House of Delegates at its 1967 meeting in Tulsa.

At that time the House of Delegates endorsed the program and authorized the OSMA Board of Trustees to appropriate sufficient funds from the association's surplus and savings to finance the association's proportionate share of the total budget.

It was further recommended and accepted that the task force be continued for a minimum period of three years.

Following the OSMA House of Delegates approval, the Health Economic Task Force was authorized to establish a public information program to increase the level of understanding of health economics throughout the state, and thereby to increase

public confidence in the value of health services as financed through the purchase of economical, high quality, voluntary prepaid protection plans.

The program is to be carried out for a minimum period of three years and would be organized generally into the following areas of activity: (1) preparation and release of "position papers" on major aspects of health economics. These would include guidelines for measuring the comparative value of health insurance policies, the costs of health care—stressing the increased value as compared to cost of medical progress, the application of sound health economic planning, economies to be gained through careful utilization of health insurance benefits, the principles of health insurance, the efficiency of private enterprise in delivering services more economically than government. (2) This information to be disseminated to the public through widespread use of the mass media. (3) The distribution of information through the organizations and individuals comprising the "health care industry." (4) The distribution of information through such organizations as Home Demonstration groups. (5) The organization of "community action" groups in cooperation with county medical societies for the purposes of furthering public understanding, promoting large scale enrollment in a high quality prepaid protection program, and initiating action to incorporate health economic teaching in the secondary school system.

The Oklahoma Hospital Association is joining with the OSMA and Blue Cross-Blue Shield to finance this three-year project.

In a letter to the Health Economic Task Force, Director Stokes outlined his ideas concerning the organization and planning necessary to implement the task force program. In the letter he called for the establishment of a statewide organization of interested persons all working toward the basic problems revealed in the survey. He advocates the use of a monthly newsletter to keep all of the organization personnel informed on the progress

and aims of the task force.

He stated that one of the first functions of the director should be the distribution of specific information to official leaders of the task force. It would give them a resource supply for needed information. Publicity releases would also be made direct from task force headquarters office to newspapers, radio, and television outlets on any sudden news break or items of major importance affecting the organization's goals. These news releases, however, would only be a part of an overall information program aimed at the people of Oklahoma.

Another recommendation was the encouragement of legislative study providing for better control by the insurance commission in the licensing and control of unethical and substandard hospital-medical insurance plans operating in Oklahoma.

The new director's first undertaking will be the establishment of a central headquarters office for the Health Economic Task Force. □

## Shock Symposium Scheduled

The Baptist Memorial Hospital in Oklahoma City will sponsor a Shock Symposium, Tuesday, March 26th.

Four guest speakers will highlight the afternoon and evening program. They are: S. Herbert Shubin, M.D., Assistant Clinical Professor of Medicine, University of Southern California School of Medicine; Richard Lillehei, M.D., Professor of Surgery, University of Minnesota School of Medicine; Lerner B. Hinshaw, Ph.D., Professor of Physiology, and Walter H. Massion, M.D., Professor of Anesthesiology, both of the University of Oklahoma School of Medicine.

Opening session of the meeting will begin at 1:00 p.m., in the east dining room of the hospital. The evening session will be presented at the Top O' Mall, Shepherd Mall at 7:30 p.m. This will be a combined meeting with the Oklahoma County Medical Society and will be preceded by a Dutch Treat dinner (\$3.50) at 5:30 p.m. All physicians, members and non-members, are invited to attend. There is no registration fee. □



## Legislative Digest

Due to the increasing number of bills that the OSMA Legislative Committee is keeping track of in the State Legislature, it will be necessary to shorten the Legislative Digest. The purpose of this condensation is to concentrate on a few important bills of general interest to all Oklahoma physicians.

At the present time the legislative committee has 48 bills under observation in the Second Session of the Thirty-First Legislature.

The following is a list of important bills that were carried over from the First Session.

### First Session

S.B. 48: This act would authorize the Board of County Commissioners to contract for ambulance services on a countywide level. It provides that the county will not be liable for damages due to the operation of such ambulance service and requires that the service carry liability insurance. This bill passed the Senate during the first session and was sent to the house. It is currently in the House Committee on County, State and Federal Government. It is *endorsed* by the Legislative Committee and the OSMA is actively seeking its passage into law.

S.B. 346: This bill authorizes the State Board of Health with the advice of the State Hospital Advisory Council and the State Board of Pharmacy to adopt rules, regulations and standards with respect to the storage and dispensing of drugs and medications for hospital patients. The Board of Pharmacy is empowered to inspect such drug room facilities and shall report violations of statutes and regulations to the State Board of Health for action. This bill is designed to correct an inconsistency in the law which has the effect of calling for a double licensure of hospital drug rooms. This particular bill was *endorsed* and *approved* by the OSMA House of Delegates during its Tulsa meeting. It is currently in the Sen-

ate Committee on Health, Welfare and Veterans Affairs.

S.B. 416: This bill will amend the workmens' compensation laws to provide for the payment for medical services to an injured employee who becomes deceased. In some instances in the past, it was necessary for the physician to go against the deceased's estate in order to be paid. This bill will provide that the employer will be liable for such medical charges. This legislation is *endorsed* by the OSMA and is currently before the House of Representatives for final passage. It came out of the House Committee on Insurance with a "do pass" recommendation.

H.B. 710: This bill was introduced into and passed the House of Representatives during the first session and provides for legal therapeutic abortions in certain instances. On January 16th of this year the Senate Judiciary Committee adopted amendments to this bill which were recommended by the OSMA and the Oklahoma Legislative Council. These amendments provide for a Committee on Therapeutic Abortions to be established in all accredited hospitals, such committee to pass on the advisability of an abortion. The bill came out of the committee with a "do pass" recommendation and now goes to the Senate for final passage. If the Senate passes the bill, it will be necessary to refer it back to the House of Representatives for their reconsideration.

### Second Session

The following bills have been introduced into the Second Session of the Thirty-First Legislature for consideration.

S.B. 477: This bill, introduced by Senators Stipe and Stansberry, is purported to be the "Tulsa Medical School" bill. It provides for the creation of a state hospital construction and maintenance fund board, the appointment of members to the board, the fixing of members terms, and prescribes their duties. The establishment of a Tulsa Medical School, however, is not mentioned in this bill. House Bill 1032 is companion legislation that would place

a two-cent tax on each package of cigarettes to fund this board.

S.J.R. 2: This resolution calls for amendment of the constitution to provide for a bond issue of \$99½ million for capitol improvements. The Medical Center of the University of Oklahoma would receive \$26½ million for improvement and expansion and other state agencies would receive varying amounts. This resolution is combined with House Bill 1144, which imposes a three-cent additional tax on each package of cigarettes and requires this tax be dedicated to the payment of interest upon retirement of the capitol improvement bonds.

H.B. 1200: This particular piece of legislation was initiated and is *endorsed* by the OSMA. It provides addition of blood products or tissues to the human body shall be deemed a service by every person participating therein and shall in no event be construed or treated as a sale. This bill removes blood and tissue from consideration as commodities and makes them services and will eliminate the possibility of a physician being sued for a "breach of warranty" for such items.

H.B. 1227: This is an act relating to insurance and provides that any clause in an insurance policy that limits the insured's free choice of health practitioner licensed under the laws of Oklahoma shall be void. The effect of this bill would be to expand the practice of chiropractic. Currently many insurance companies operating in Oklahoma refuse to pay for a chiropractor's services. This bill will force them to pay for such services even though their policy expressly limits payment to a medical doctor or osteopath.

H.B. 1276: Provides that the Oklahoma Department of Health shall be made a licensing agency for licensing, inspection and regulation of ambulances. The bill provides for standards for licensing of ambulances, drivers, attendants and attendant-drivers and requires ambulance companies to keep certain records and reports. This bill is designed to improve ambulance service and is *endorsed* by the OSMA. □



## Medical-Legal Institute Planned By OSMA-OBA

A joint meeting of the Oklahoma State Medical Association's and the Oklahoma Bar Association's committees has resulted in the planning of a medical-legal institute to be held July 11th through 13th at Fountainhead Lodge.

During the three-day meeting doctors and lawyers in attendance will hear discussions on such topics as professional corporations, medical reports and deposition, interprofessional relations between doctors and lawyers, medical witnesses, informed consent, limitations of diagnostic aid and of prognosis, trends in malpractice suits, business and tax problems in medical practices, and physicians' annual legal check-up, professional and personal.

OSMA Committee Chairman, Barton Carl, M.D., explained that the three-day conference is being designed to give physicians and attorneys the latest information available that is of mutual interest to both professions.

A registration fee of \$25 will be charged to underwrite the expenses of the institute. This will pay the travel expenses for several "top-notch" out-of-state speakers. Any profit from the institute will go into a special fund for future joint medical-legal programs.

The Thursday, July 11th, afternoon session will feature a topic of maximum mutual doctor-lawyer concern. This session will be followed by a cocktail party for all persons in attendance.

The Friday sessions will be held in the morning and evening, leaving the afternoon free for recreation. The closing session, Saturday, will be held in the morning and will be concerned with interprofessional relations.

A special subcommittee made up of attorneys and physicians has been chosen to select the national speakers and work out details for the final program.

OBA Chairman, George Short, LL.B., pointed out that many of the topics for this year's institute are

in areas that have created misunderstandings between doctors and lawyers. Other topics are in the areas of mutual concern to both professions. In particular, the question of "professional corporations" and their current legal and tax status fall into this area of mutual concern.

All members of the OSMA and the Oklahoma Bar Association are being urged to attend this medical-legal institute. □

## GRANDPA'S GRANDPA

Continued from page 51

Merely removing the stimulus to the artificial heart could not be considered murder, the argument went. After all, God had created GG with a heart and the heart was still present in the body. If the heart machine were turned off, then it was God's decision whether GG's human heart would function.

A meeting of the clan was called to discuss the wisdom of keeping GG alive, especially in the light of community pressure and gossip. But the family closed ranks—no outsiders were going to tell them what to do with their poor old Grandpa's Grandpa.

The fifth "make-the-decision" session, the first that I've attended, was rather serious because the nature of the problem had changed. A miraculous device had been invented which, if installed, would prolong GG's life indefinitely, possibly for hundreds of years.

Many problems had been created by the invention of that device, not the least of which was how to justify not using the machine. When Grandpa, at age 75, had become the recipient of an artificial heart, his existence simply had been presented to a future generation, to prolong or end as it thought best.

This new twist to the GG problem completely broke down the decision-making process. No decision was made—as I said before, three members of the family ended the discussion when they said they couldn't make it to a funeral, altho we all knew that they really could.

So GG is 125 today, and I couldn't help thinking during the meeting . . .

*The surgeon put a ticker in  
To keep our Gramp alive.*

*But who will turn the gadget off  
At a hundred twenty-five?*

*We often call a problem solved  
Because it goes away.*

*And then we find to our chagrin  
The same one's there next day.*

*But progress is our way of life,  
So why should it seem strange.*

*If the questions must remain the  
same,*

*It's the answers that we'll change.*

—Walter C. Bornemeier, M.D.

Reprinted, courtesy of the *Chicago Tribune*.

## Medical Assistants To Hold Seminar

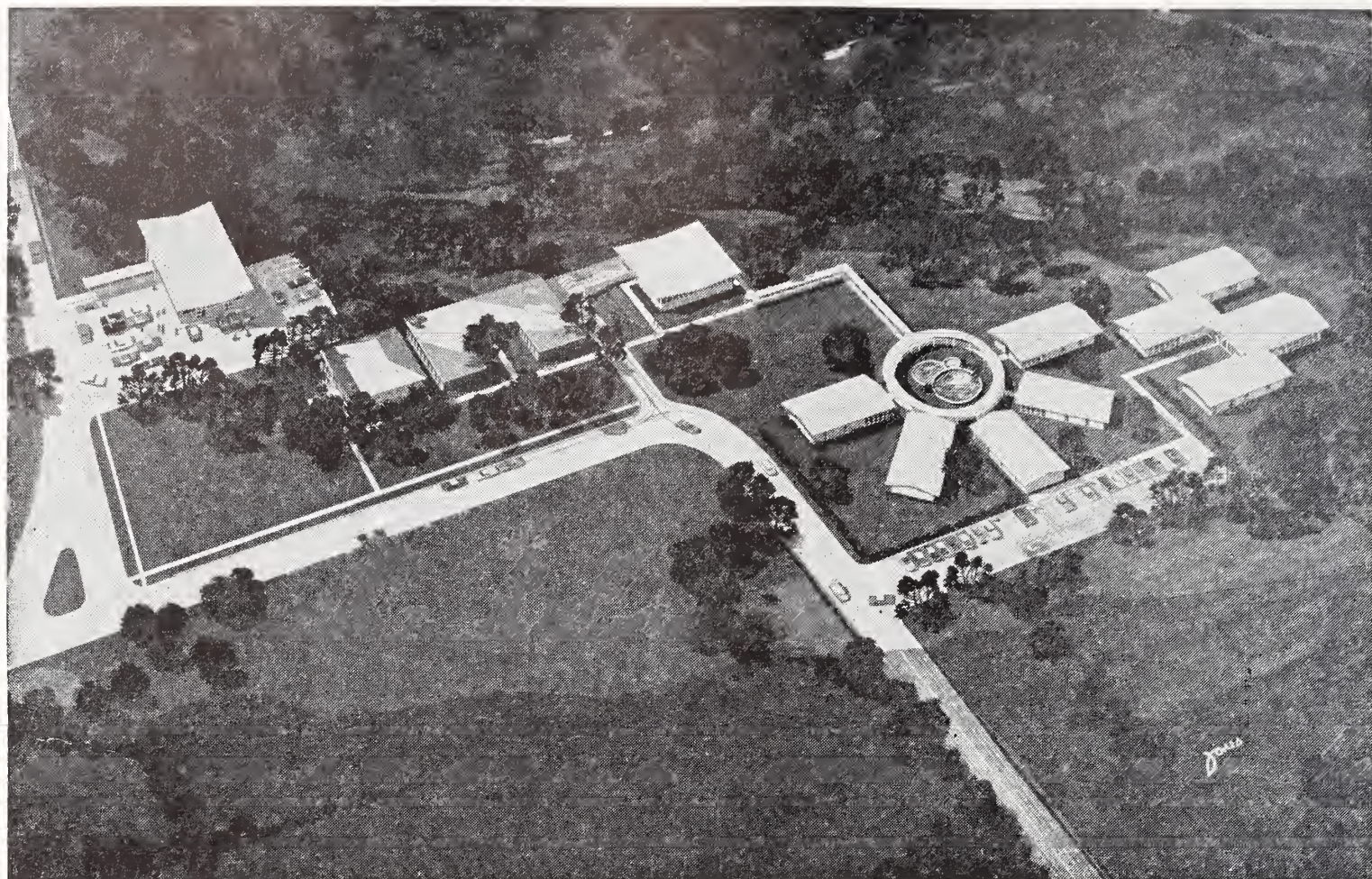
The eighth annual seminar for the Oklahoma State Medical Assistants Society will be held March 16th and 17th, 1968, in the Little Theater, Student Union, Oklahoma State University, Stillwater, Oklahoma. This year, both medical and administrative topics will share the spotlight as well as changes in the "Certification Program."

Malcom Phelps, M.D., Vice-President of the American Medical Association, El Reno, will open the program with a presentation on medical care for civilians in Vietnam. Maxwell A. Johnson, M.D., President of the Oklahoma State Medical Association, Tulsa, and H. E. Denyer, M.D., Bartlesville, will round out the medical topics during the seminar.

Doctor Lynn L. Gee, Professor and Head of the Department of Microbiology, Oklahoma State University, will present the film "Maganga" as part of his presentation. Other topics of interest will be offerings on drug control, travel schedules, and leadership. The speaker at the graduation luncheon will be Doctor Donald L. Cooper, Director of the OSU Hospital and Clinic.

Mrs. Betty Whitworth, President of the OSMAS, Frederick, encourages all medical assistants to attend. Miss Gerry Schwarz, Education Chairman, states, "This will be one of our better seminars. Don't miss it." Registration begins at 12:45 p.m. on the 16th and the program ends with a luncheon on Sunday. □





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Jackson H. Speegle, M.D.  
Fred H. Jordan, M.D.  
Joseph H. Lindsay, M.D.  
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## Ancient Medical Figurines Shown

The Wiseman Collection of Pre-Columbian Miniatures, an archaeological exhibit of special interest to members of the medical profession, may be seen February 5th through February 22nd at Stovall Museum of Science and History, University of Oklahoma, Norman, Oklahoma.

The more than 100 miniature clay figures shown in this exhibit have been found in graves and tombs in Mexico and South America and are believed to date from about 500 B.C. to 800 A.D. These miniature medically-oriented figurines, none more than 5½ inches in size, reveal the astonishing medical knowledge of civilizations that vanished long ago.

With startling realism the sculptors depicted the pathology of many diseases and the physical states of their peoples, the knowledge of their physicians, the skill of their surgeons. They captured in clay the visible signs of malnutrition, deformity, physical and mental sickness, the stages of pregnancy and childbirth, the techniques of amputation, trephining, and cesarean section.

Here are found accurate representations of the symptoms and signs of goiters and abdominal tumors, reactions to asthmatic attacks and cardiac anginal pain, and even such ordinary complaints as headaches, stomachaches, and toothaches. The pieces on display have been divided into 21 different groups according to their subject matter.

This exhibit is presented through the courtesy of the collector, Abner T. Weisman, M.D., Clinical Professor of Obstetrics and Gynecology at New York Medical College, Flower and Fifth Avenue Hospitals, New York, N.Y.

Doctor Weisman first became interested in the medical practices of other cultures when in 1944 he was assigned to a Sioux reservation in the Dakotas as a U.S. Public Health Service physician. Sometime later, while traveling in Mexico, he discovered that many pre-Columbian

## F. P. Baker, M.D., Receives 50-Year-Pin



C. S. Cunningham, M.D. (left), Alternate Delegate to the Oklahoma State Medical Association from Poteau, is shown presenting F. P. Baker, M.D., Talihina, a 50-Year-Pin from the association. Doctor Baker was honored at the regular meeting of the LeFlore-Haskell County Medical Society held January 12th, at the Black Angus Motel in Poteau. □

figures portrayed physical defects. He felt that the peoples of the early American continent were trying to tell a medical history. As a result Doctor Weisman began to gather and study clay sculpture from Mexico, Central and South America.

No one can say with certainty why these ancient sculptors chose such themes. Like other sculpture of this era, medical sculpture was almost always placed in the graves, either as part of the deceased person's treasured possessions, or perhaps to explain to the gods the circumstances of illness or death. Doctor Weisman presents another theory. He suggests that some of the figures may have originally been used as models for medical instruction. Whatever the artist's motive, he had a medical story to tell and he told it in clay.

This collection of medical miniatures has been the recipient of two major awards: a Special Award by the American College of Obstetricians and Gynecologists, April, 1966; and the Wirt. B. Dakin Historical Exhibit Award by the American Urological Association, May, 1967. □

## WASAMA Founder To Be Honored

Mrs. George H. Garrison, founder of the Woman's Auxiliary to the Student American Medical Association, will be honored at an appreciation breakfast on Saturday, March 16th. The event, being held in connection with the regional convention of the Student American Medical Association and its Auxiliary, will be held at the Faculty House, 601 N.E. 14th Street, Oklahoma City, at 8:00 a.m.

Mrs. Garrison is the wife of George H. Garrison, M.D., Oklahoma City pediatrician and former president of the OSMA.

According to James L. Dennis, M.D., Vice-President and Dean of the University of Oklahoma Medical Center, who will preside at the breakfast, "It is rare that Oklahoma and the University of Oklahoma Medical Center have the opportunity of honoring the founder of a great and growing national organization."

All OSMA members and their wives are urged to attend. Reservations should be made with Mrs. Anna Jo McMurphy at 236-5986 or 843-3806. □



## DEATHS

N. PRICE ELEY, M.D.

1897-1968

A prominent Oklahoma City physician, N. Price Eley, M.D., died February 2nd, 1968. Born in Corsicana, Texas, he graduated from the University of Oklahoma School of Medicine in 1922, where he taught in the Department of Medicine for 35 years. Doctor Eley had practiced in Oklahoma City since he completed his residency training. In 1957, he retired from active practice and for the past five years had been Director of the Medical Review Board of the Oklahoma Welfare Department.

In 1962, the Oklahoma State Medical Association honored Doctor Eley for his outstanding service to his profession and to humanity with a Life Membership in the association.

PAUL E. CRAIG, M.D.

1904-1968

Paul E. Craig, M.D., Tulsa physician and father of Kenneth Craig, M.D., Beaver, died January 22nd, 1968. A native of Chalmers, Indiana, he was a graduate of Northwestern University School of Medicine. After practicing in Winneconne, Wisconsin and Coffeyville, Kansas, Doctor Craig came to Tulsa in 1945.

He was a member of the Oklahoma Chapter of the American Academy of General Practice and the Mississippi Valley Medical Writers Association.

W. N. DAVIDSON, M.D.

1892-1968

W. N. Davidson, M.D., a Cushing physician for over 40 years, died in Ohio, January 12th, 1968. Doctor Davidson, whose specialty was ophthalmology, graduated from the University of Oklahoma School of Medicine in 1919.

He was a past-president of the Payne-Pawnee County Medical Society and had served with the Medical Corps during World War II.

RALPH F. MARTIN, M.D.

1913-1968

Ralph F. Martin, M.D., Sand Springs physician, died in Tulsa, January 4th, 1968. A native of Big Flat, Arkansas, he graduated from the University of Arkansas School of Medicine in 1947. The following year he established his general practice in Tulsa and in 1949 he moved to Sand Springs, where he remained until his retirement a few years ago.

R. NOWLIN HOLCOMBE, M.D.

1892-1967

A long-time Muskogee physician, R. Nowlin Holcombe, M.D., died in Muskogee, December 27th, 1967. Originally from Virginia, he graduated from Washington University School of Medicine in 1916. In 1919, he established his practice in Muskogee, where he remained until his death. Doctor Holcombe served with the Medical Corps during both World War I and II.

In 1964, the OSMA presented Doctor Holcombe with a Life Membership in recognition of his years of service to the profession.

NOAH E. RUHL, M.D.

1879-1968

A retired Oklahoma City physician, Noah E. Ruhl, M.D., died in Oklahoma City January 3rd, 1968. Born in Hutchinson, Kansas in 1879, Doctor Ruhl graduated from the Washington University School of Medicine in 1906. He had practiced in various Oklahoma cities before moving to Oklahoma City.

Noting over 50 years of dedicated service to humanity, the OSMA presented Doctor Ruhl with a Life Membership in 1957. □

## Mental Health

## Seminar Planned

The Second Annual Practicing Physicians Mental Health Seminar will be held at Central State Hospital in Norman, April 26th and 27th. This day and a half meeting will be sponsored by the Oklahoma Chapter of the American Academy of General Practice and the district branch of the American Psychiatric Association.

On Friday, April 26th, the seminar will convene at 10:00 a.m. with a discussion of changing concepts of mental hospital care from a practicing physician's standpoint (including referral, treatment concepts and follow-up). A presentation of cases and discussion will follow.

Three hours during the afternoon will be spent visiting patients in the wards and discussing methods of handling by resident psychiatrists and the staff.

Two lectures and a panel discussion on current conflicts of society related to dissent and psycho-sexual problems and how the practicing physician can better deal with them will highlight the Saturday session on April 27th. One of the lectures will be given by Louis Jolyon West, M.D., Professor and Head of the Department of Psychiatry, University of Oklahoma School of Medicine, whose topic will be "Use and Abuse of Hallucinatory Drugs."

Wives of attending physicians are invited to attend the Friday evening entertainment which will include attending the Mummars Theatre in Oklahoma City where "Right You Are"—L. Pirandello's famed Pulitzer Prize drama on the fixation with the fine line between fantasy and fact and the juxtaposition of illusion and delusion, will be presented.

Reservations for this seminar should be sent directly to Nolen L. Armstrong, M.D., Chairman of the Mental Health Committee, Oklahoma Chapter of the American Academy of General Practice, 2529 N.W. 61st Street, Oklahoma City, Oklahoma. □



## BOOK REVIEWS

**REVIEW AND TEST MANUAL FOR DENTAL ASSISTANTS.** Shailer Peterson, M.A., Ph.D., Dean, University of Tennessee, College of Dentistry, Memphis, Tennessee and Wade B. Winnett, D.D.S., Professor and Chairman of the Department for Education of Auxiliary Dental Personnel, University of Tennessee, College of Dentistry, Memphis, Tennessee. The C. V. Mosby Company, St. Louis, Missouri. \$4.95.

This publication is a study or review manual for those learning to become dental assistants and for those studying to improve themselves. I agree with what the authors say in the preface: "Dentists will also find the review interesting, for it will demonstrate what the well-trained dental assistant is being taught today." This manual offers a comprehensive pretest examination for dental assistants; also there are 18 chapters with unit examinations after each chapter.

These chapters deal with the following subjects: History of dentistry, chairside operations, with dentist and patient, dental health, house-keeping duties in office, overall operations of mechanics of dental office, practice administration, the dental office of the future, professional responsibilities of the dental assistant, recognition and certification, and importance of the secretary-receptionist.

These chapters are followed by a final course test for dental assistants. To quote again from the sixth paragraph of the preface: "For example, someone who has never studied dental assisting before may get a score as low as 25 right answers out of the total number of 191 items on the pretest; whereas at the end of the course study, the same person will probably get a final score of 110 to 150 for average accomplishment. A score of over 150 would indicate that the prospective dental assistant had done superior work as a student." This shows that a student should have a much higher score on the final ex-

amination, which helps to determine the individual's growth of knowledge.

The authors have done a fine job in preparing this manual, and I recommend it for study by anyone in the field of dentistry. There are questions that necessitate memory, but, also questions that involve judgment. Dentistry is a very broad profession and this manual helps the people in dentistry to further understand the problems of our profession with the lay public.—*William N. Flescher, D.D.S.*

**THE PHYSICIAN'S CAREER — A Teaching Outline on Medical Practice and Community Relations, for Physicians and Medical Students.** Edited by Henry F. Howe. Chicago: American Medical Association, 1967, 90 pp., 75c.

In its new paperback volume, "The Physician's Career," The American Medical Association has provided a constructive contribution to the continuing socioeconomic education of physicians. In its two parts, "The Practice of Medicine," and "The Physician in the Total Community," the book packs both factual information and an informative approach to current problems of community medicine. Its well-fleshed outline, while not a textbook, fulfills many of the practical needs of the physician in those procedural areas of practice usually ignored by medical school curricula. Hospital staff relations, health insurance, and the use of community health and public health resources are emphasized. Medical ethics, medico-legal responsibilities are emphasized. Medical ethics, medico-legal responsibilities and the allied health professions and services are well summarized. Although it is subtitled a, "Teaching Outline," the book is also a useful handbook for any physician. Being reasonably priced, it should have a wide circulation among the members of the profession and especially among senior medical students, interns and residents.

**HANDBOOK OF ORTHOPAEDIC SURGERY.** By A. R. Shands, Jr., R. B. Raney, Sr., and H. R. Brahear. St. Louis: The C. V. Mosby Company, 1967, 572 pp., \$12.00.

This text, which is now in its seventh edition, provides an excellent and concise overview of lesions of the musculoskeletal system. The first edition was produced by Doctor A. R. Shands, Jr., one of the deans of orthopedic surgery. Beginning with the sixth edition, co-authorship was adopted and this has been continued in the seventh edition. Perhaps its major attributes are the clear definition of orthopedic terms, the comprehensive listing of pathologic entities and the excellent illustrations. The section on congenital abnormalities is particularly praiseworthy.

Inclusion of the reticuloendothelioses under "affections caused by abnormalities of diet or metabolism" is open to question as is the inclusion of fibrous dysplasia as "an affection caused by congenital developmental abnormalities." Both these lesions probably fit under tumors or related conditions. The discussion of low back pain appears to be contradictory and probably represents the differing opinions of various authors. The listing of "general affections of the skeleton" is somewhat incomplete but it does include the most common conditions.

This edition, as have previous ones, is an excellent, general reference particularly for physicians who are not in the field of orthopedic surgery.—*Harris D. Riley, Jr., M.D.*

**DRUG ABUSE: ESCAPE TO NOWHERE—A GUIDE FOR EDUCATORS;** 1st Edition, Paperback, 105 pp., Published by Smith, Kline and French Laboratories, Philadelphia, in cooperation with the National Education Association, 1967. \$2.00 per individual copy; available from National Education Association Publication—Sales Department, 1201 Sixteenth Street, N.W., Washington, D.C. 20036.

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should be instructed to take doses immediately before or after meals or with milk to minimize gastric upset. Mild drug rashes frequently subside with reduction of dosage. However, rash accompanied by fever or other systemic reactions usually requires withholding medication. Purpuric rash has also been reported. Agranulocytosis, exfoliative dermatitis, Stevens-Johnson syndrome, or a generalized allergic reaction similar to serum sickness may occur and require permanent withdrawal of medication. Stomatitis, salivary gland enlargement, vomiting, vertigo and languor may occur. Leukemia and leukemoid reactions have been reported. While not definitely attributable to the drug, a causal relationship cannot be excluded. Thrombocytopenic purpura and aplastic anemia may occur. Confusional states, agitation, headache, blurred vision, optic neuritis and transient hearing loss have been reported, as have hyperglycemia, hepatitis, jaundice, and several cases of anuria and hematuria. With long-term use, reversible thyroid hyperplasia may occur infrequently. Moderate lowering of the red cell count due to hemodilution may occur.



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Primarily designed as an introductory guide for educators, this book presents a general review of drug abuse in a very readable fashion. A brief presentation of the history of drug usage puts today's problems into perspective. The pharmacologic effects and methods of abuse of narcotics, sedatives, tranquilizers, stimulants, hallucinogens and solvents is reviewed in terms that the layman can understand. There is a short discussion on the type of person in whom drug abuse becomes a problem and the methods of therapy available. Methods for teaching about drug abuse in the schools are suggested and a glossary of slang terms is provided. A brief review of Federal narcotic laws and regulatory mechanisms illustrates attempts to control drug abuse.

This is an excellent general review of drug abuse that is appropriate not only for teachers and admin-

istrators, but also for medical and nursing students and others in the health related professions, who might have occasion to come in contact with drug abusers, or who might be tempted to experiment with drug usage themselves.—*Paxton Howard, Jr., M.D.*

**CIBA FOUNDATION SYMPOSIUM: PRINCIPLES OF BIOMOLECULAR ORGANIZATION.** Edited by G. E. W. Wolstenholme. Boston: Little, Brown and Company, 1966, 491 pp. \$15.00.

This is another in the series of proceedings of symposia of the Ciba Foundation which treat some subject in depth by authorities in the specific field. This particular Symposium was held in June, 1965 and included 29 participants from different countries but chiefly from England. It is chaired by F. H. C. Crick, a Nobelist for his work in genetics.

This symposium covers the cur-

rent status of investigation relating to the organization of large biological molecules and the formation of fibres and totally enclosed particles such as virus particles by the spontaneous condensation of these molecules. A process now recognized as being analogous to ordinary crystallization with the difference that, unlike crystals, the products are limited in one or more of their dimensions. Much of the text in this book is devoted to the subject of the structure and assembly of regular biological objects such as the viruses, proteins, membranes and tubules which have structures less perfect than classical crystals but obey similar rules.

This is another excellent production in this series. It is enhanced by the inclusion of discussion after the various papers. The book will be interesting only to investigators working in this particular field and not to physicians in general.—*Harris D. Riley, Jr., M.D.* □

## Miscellaneous Advertisements

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1964 OU GRADUATE completing first-year surgery residency desires location in Oklahoma town, 6,000 to 20,000 population. Military obligations completed. Contact William L. Edwards, M.D., 6633 Askew Avenue, Kansas City, Missouri 64132.

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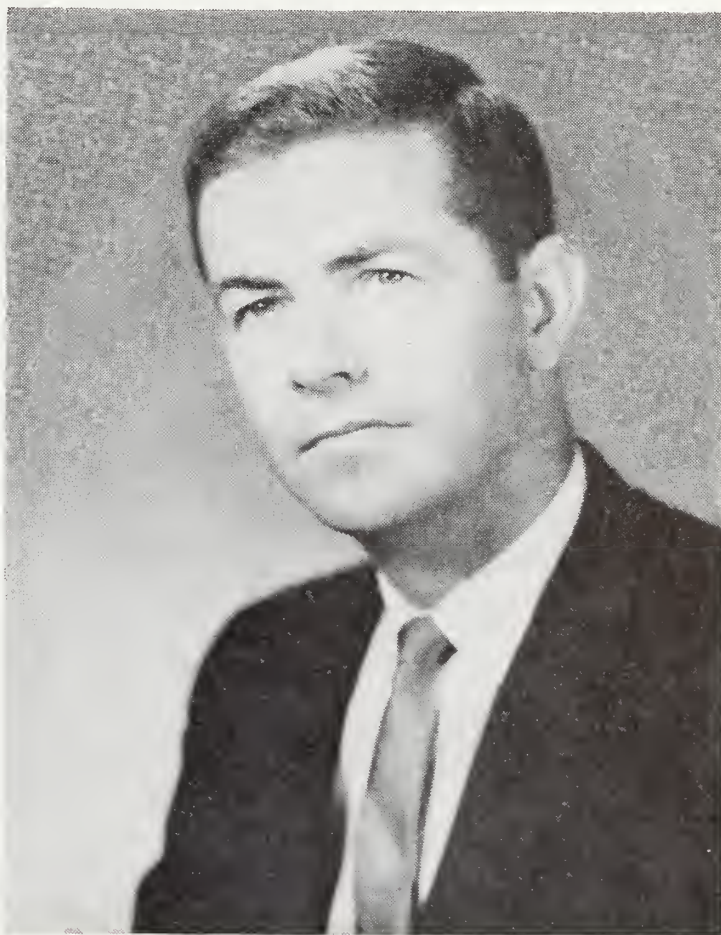
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**in moderate hypertension and  
poorly controlled mild hypertension**  
(when diuretics or sedatives are inadequate, for example)







DWIGHT F. WHELAN

*December 11th, 1935-February 13th, 1968*

**S**PECIAL RECOGNITION is owed to Dwight Whelan, OSMA Associate Executive Secretary, whose remarkable life and blooming potential were cut short by an automobile accident on February 13th. Those who knew him well seem to speak in a single voice: The association has lost an uncommonly talented and extraordinarily fine young man. Dwight was the OSMA lobbyist at the State Legislature, and his value as friend and advisor to our legislators was demonstrated by the spontaneous House and Senate reactions to his death, as both passed resolutions of commendation and sympathy, tributes which are infrequently bestowed. Dwight worked

tirelessly and well for the OSMA, but he also stood above the crowd as he devoted every available extracurricular hour to building a better community. Ironically, his most recent project—launched three days before his collision with a power pole on the North Broadway Extension—was to remove these hazards from the right of way of this particular road. Dwight possessed an unique capacity for “instant friendship,” and his death left a vacuum in the lives of all who were privileged to know him, because here was a man who had truly captured the spark of living. □



## Drugs--Judgment or Regulation

AS WITH MANY important issues today the subject of so-called "generic dispensing" is clouded with a great number of confusing and conflicting statements.

Generic prescribing is not new and has been an integral part of prescribing for many years. A drug usually has three names: A chemical name, which has significance primarily to the chemist; a generic name, which is somewhat simpler and has greater understanding in medicine and pharmacy; and a trade or brand name which conveys information as to the manufacturer of a product. Thus for particular generic drug entities there may exist different brand names, connoting a difference in the method of manufacture, controls at different levels of production, and a history of clinical performance characteristic of that particular brand.

A pharmaceutical product is more than a drug, and the care, skill and integrity used in its manufacture may make all the difference in the performance of that product in a patient. There are those who would have us believe that all products containing the same generic drug are therapeutically identical but this is not true. The Commissioner of the Food and Drug Administration in recent testimony and speeches has clearly indicated that although he might like to give the assurance that all drug products are clinically equivalent, at this point in time he cannot honestly do so.

A great deal has been made of the fact that the government buys drugs under generic names only. However, if one examines the bid awards, one finds an overwhelming majority of products supplied by brand name manufacturers. In a recent speech, a representative of the Defense Personnel Support Center indicated, "Basically, our problem is this: Chemically equivalent items are not necessarily stable, therapeutically equivalent

products . . . 45 per cent of the pre-award samples submitted by the low bidder last year failed to pass our tests."

The truth of the matter is that the technology of understanding drug action, availability, absorption, excretion, binding, partition coefficient, solubility, enzymatic interaction and a host of other factors is still in its infancy. These are more than mere technical characteristics; they are determinants of therapeutic performance. Thus the history of experience by the physician and pharmacist and the integrity of the producer to produce drugs which result in consistently reproducible action is the most reliable guide available at this time. Any effort to remove the prescription decision from the physician and substitute some government constituted authority, is a dangerous proposal which could be detrimental to the health of the patient and a serious blow to the high quality medical care in this country.

The number of products for which generic prescribing might result in savings for patients represent less than 20 per cent of the number of prescriptions dispensed annually. In some of these instances the real savings are relatively insignificant. The proposed savings that are supposedly available have been exaggerated. In the majority of instances of generic prescriptions, it has been the policy of most pharmacists to dispense only those products which experience has shown to be therapeutically reliable—generally a branded product.

The physician, who has the ultimate responsibility for the treatment of the patient, should be constantly aware of the drug products *prescribed* and *dispensed* for his patients. He can on occasion, by consulting with his pharmacist, select products in which a degree of confidence can be assured with some cost savings resulting. However, an understanding of all parameters involved is essential. There have been too many instances where patients on maintenance therapy with such drugs as anticoagulants are hospitalized and products of different manufacture are supplied with disturbing and even life-threatening results.

Regardless of the advancement of our scientific information, a great deal of the practice of medicine and of pharmacy in-

Continued on page 133





On February 13th we were all shocked and saddened by the sudden death of Dwight Fraim Whelan, our dependable associate secretary. On other pages of this issue you will read of his value to us as members of the OSMA. We who worked

with him closely feel an indescribable personal loss with his passing.

As was announced to you by mail, we have set up a Dwight Whelan Memorial Fund to help educate his children. Many of you have sent your (tax deductible) checks to the OSMA headquarters and the fund now stands at over \$9,000.00. I hope that all of you who have delayed sending off that check will do so today. What an expression of loyalty it would be if every member would see fit to send in a contribution!

With the legislature meeting every year Dwight was more than ever occupied with legislative problems. However, he carried on his duties as a secretary by working evenings and had done a great job this year in lining up commercial exhibits for the annual meeting. Both the legislative and annual meeting work will have to be passed on to the already overburdened Don Blair and Ed Kelsay. As an aid to them, I am asking each council and committee chairman to prepare his own yearly report. Many of our leaders have already volunteered to do this and I hope the remainder will assume this task. These reports can be abbreviated, and inactive committees may simply turn in a "no report." We have an outstanding meeting planned and for Dwight's sake, if for no other, we must all work together to bring it to fruition. □

Sincerely yours,

*Maxwell A. Johnson*



## Cytogenetics: A Review

DALE E. VAN WORMER, M.D.  
JACK PADEN, M.T.

*A brief review of the laboratory and  
clinical aspects of cytogenetic  
testing techniques.*

**C**YTOGENETIC TESTING, either screening for the nuclear sex chromatin mass or chromosome analysis, has gained in importance in the evaluation of several clinical situations in the past five years. These studies are definitely indicated in some situations and are possibly helpful in others. Other clinical problems which seem to be closely related, do not lend themselves to these studies. In order to provide the best medical care, we should be aware of those which will help and avoid those which do not. This is a brief review of the laboratory and clinical aspects of cytogenetics, hoping to provide a better understanding of this relatively new and extremely interesting field.

Abnormalities of chromosomes which result in clinically significant changes in humans are deviations of the normal mechanism of cell division. It is necessary therefore, to understand the normal events if the ab-

normal are to be appreciated. The cells in sexually reproducing organisms divide in one of two ways: Mitosis or meiosis. Mitosis is the division of somatic cells. The resulting two daughter cells contain the same number of chromosomes as the parent. Meiosis is the division of the germ cell; resulting in four daughter cells (ova or spermatozoa) containing half as many chromosomes as the parent cell. The haploid number ( $n$ ) in humans is 23. All cells except the gametes are diploid ( $2n$ ), that is they contain 46 chromosomes. Normal somatic cell division or mitosis is divided into five phases, interphase, prophase, metaphase, anaphase and telophase (figure 1). Although interphase has been described as the resting phase this is now known to be in error. DNA replication occurs during this phase and this chemical stage of mitosis is a most important and active step in cell division. The normal DNA content of the cell nucleus ( $2n$ ) doubles ( $4n$ ) although the visible chromosome content remains  $2n$ . This provides the necessary genetic material for the visible or mechanical part of cell division. These visible changes are first seen in prophase. The diffusely scattered chromatin condenses into long slender strands and although these prophase chromosomes are so tangled as to be individually indistinguishable, by the end of prophase many assume individuality. During



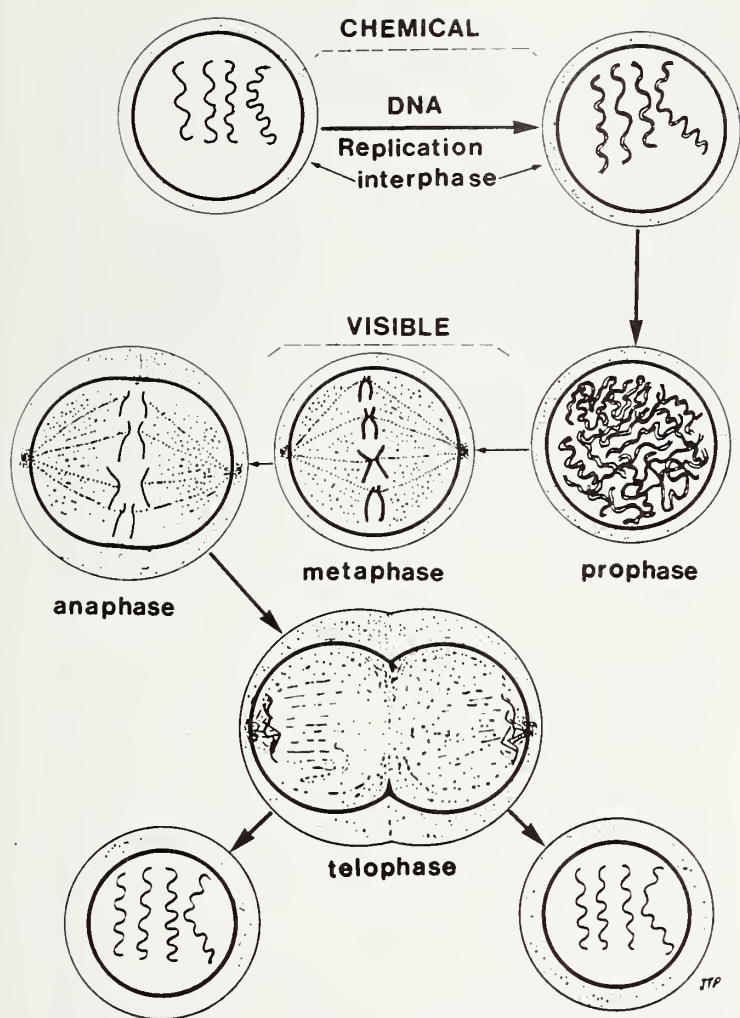


Figure 1. Diagrammatic outline of mitosis.

metaphase the spindle apparatus forms and the chromosomes undergo longitudinal division. The spindle is a bipolar structure composed of proteinaceous threads derived from the cytoplasm. These threads are attached to a centrosome at each pole of the cell and to the centromere of the chromosome. The metaphase chromosomes are condensed and are arranged in a discoid configuration at the cell equator. This is the best stage for studying chromosome morphology and the karyotypes one sees in articles concerning cytogenetics are arrangements of metaphase chromosomes. The chromosomes are split into two halves or chromatids which remain attached at the centromere. When the centromere splits and the chromatids begin to separate, anaphase has begun. Separation and migration of the chromatids is called disjunction and failure of this mechanism or non-disjunction is an important cause of chromosome aberrations. As the chromatids accumulate at the cell pole they begin to function as chromosomes. The nuclear membrane which was lysed during prophase reforms and a binucleated cell

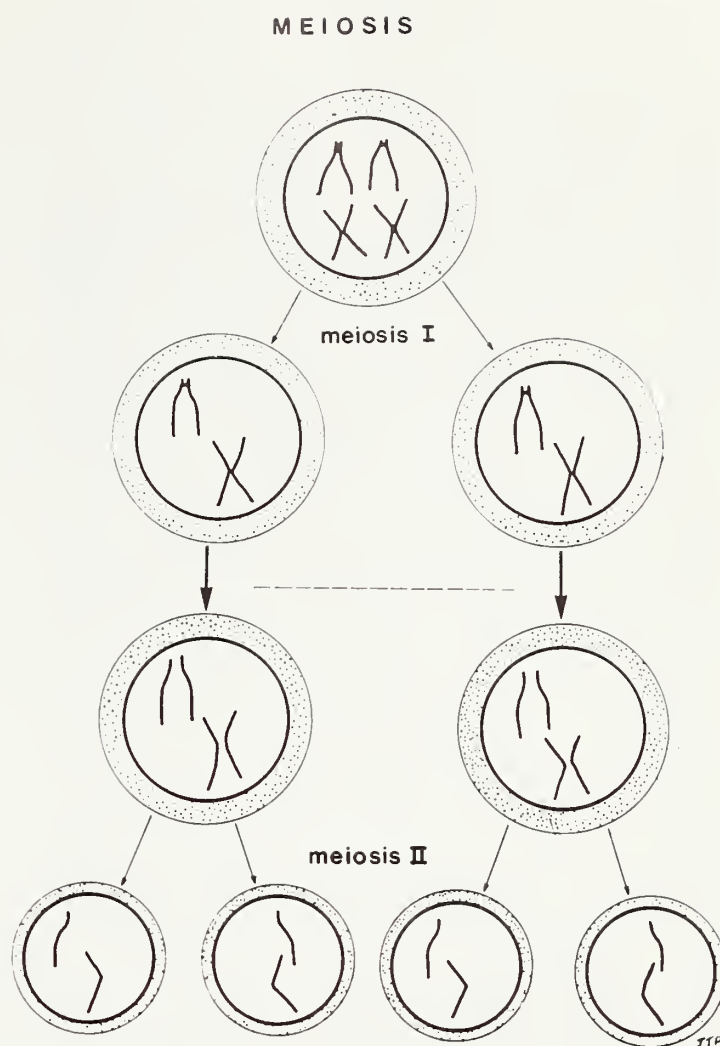


Figure 2. Diagrammatic outline of meiosis.

is temporarily formed. The formation of new cell walls results in two daughter cells each containing the same amount of genetic material as the parent cell.

Meiosis is the cell division of gametes which results in a haploid daughter cell (figure 2). This enables the species to maintain a constant and characteristic chromosome number. Meiosis is actually two successive cell divisions, meiosis I and meiosis II. The first meiotic division, also known as reductional division, starts with prophase which is a long and comparatively complex phase characterized by several significant phenomena which are found no other place in cell division. During this phase the DNA replicates and forms a double amount of chromatin material. The long string-like chromosomes (chromonemata) which are composed of double the usual amount of DNA, undergo intimate pairing which is called synapsis. Following this the chromosomes become progressively shorter and are usually individually recognizable. The chromosome pairs become arranged at the equatorial plate in a manner peculiar to meiosis



I. The arms of the chromatids are closely approximated, and at this stage crossing over occurs. The points at which the chromosomes come into intimate contact with each other are called chiasmata and an actual exchange of genetic material occurs between them. As soon as this phenomenon has occurred the chromosomes separate and migrate to the cell poles during the next stage or anaphase. It is important to remember that the whole chromosome migrates to the cell pole in anaphase I, the first meiotic disjunction. The chromosomes which accumulate at each cell pole become enclosed in a new nuclear membrane and then disperse to form the chromatin of the daughter nucleus. This contains 23 unpaired chromosomes. In meiosis II, which is an equational division, the daughter cells of meiosis I divide again and produce two more haploid daughter cells; thus after complete meiosis there are four gametes having half the chromosome number of the original parent cells. In the metaphase stage of the second meiotic division (the equational division) the chromosomes line up as do the chromosomes in mitosis and each centromere has a bipolar spindle attachment. Because of this the chromatids divide and migrate to opposite poles of the cell. This is the second meiotic disjunction. Although meiosis in man follows the general pattern just summarized, first meiosis in the ovum is quite lengthy. All primary oocytes are formed prior to birth of the female infant and have completed most of prophase of the first meiotic division by the time of birth. No further activity occurs

until just prior to ovulation. At this time reduction division is completed, however meiosis II is usually not completed until after entry of the sperm. Only a single ovum is produced from each oocyte, three polar bodies being expelled.

Table I lists some of the indications for initiating a cytogenetic laboratory work-up. Intersex or suspected intersex can best be properly defined by studying the chromosomes of the individual concerned and the nuclear chromatin mass in the somatic cells. This should be considered in the case of ambiguous genitalia, the presence of an inguinal hernia in a female, cryptorchism, abnormal sex habitus, the presence of true hemophilia in a phenotypic female, gynecomastia and a family history of abnormal sex manifestations. Genetic counseling is also an important indication for a cytogenetic work-up. A strong family history of congenital abnormalities including mental retardation may well be investigated. Appearance of a mongoloid child or other children with an abnormality usually associated with chromosome aberration should be studied in order to provide proper counseling for future pregnancies. Habitual abortion is another situation in which chromosome studies have been helpful.<sup>8</sup> Other indications are a sterility work-up, and prolonged primary or secondary amenorrhea when the history, physical examination and basic laboratory data fail to demonstrate obvious causes for these phenomena. The differential diagnosis of chronic myelocytic leukemia versus a marked leukemoid reaction, particularly in older age groups is a definite indication for chromosome cultures.

The laboratory investigation of a patient with a possible cytogenetic problem consists of three basic procedures. The first of these is the determination of the presence or absence of the sex chromatin mass, which is theoretically present in the interphase nuclei of all somatic cells in a female. It is a mass of DNA closely attached to the nuclear membrane, has true morphology and varies in size, depending on the origin of the cell being examined (figure 3). Study of smears from the buccal mucosa is the most convenient method of evaluating patients and provides very useful information, especially as a screening technique. The epithelial cells obtained must contain large vesicular nuclei

Table I

Indications for Cytogenetic Testing
Investigation of congenital defects in the newborn
Genetic counseling and prognosis
Investigation of clinical intersex
Ambiguous genitalia (newborn)
Inguinal hernia in a female
Cryptorchism
Abnormal sex habitus (puberty)
True hemophilia in a phenotypic female
Color blindness in a phenotypic female
Gynecomastia
Infertility (male and female)
Differentiation of chronic granulocytic leukemia and leukemoid reactions
Investigation of mental deficiency
Investigation of habitual abortion



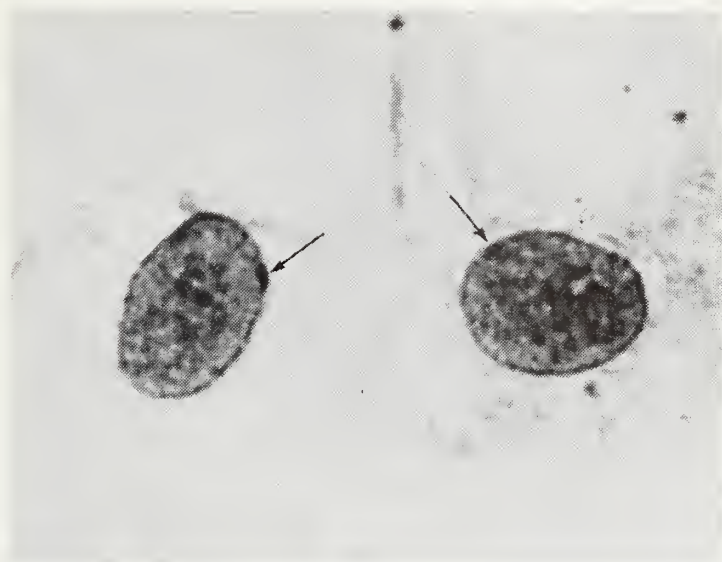


Figure 3. Photomicrograph of a buccal mucosal cell demonstrating a Barr body.

and therefore the superficial cells must be removed before making the smears. Although several techniques are in vogue, the one preferred by the authors is the use of a tongue blade broken in half. In adults and other cooperative patients the mouth is first rinsed with water. The buccal mucosa is stretched taut with the finger of the left hand, the mucosal membrane is then wiped vigorously with a sponge and then scraped rather vigorously one or two times with the rounded portion of one-half of the tongue blade. This scraping is discarded. Using the other half of the tongue blade another very vigorous scrape is made and immediately smeared on a slide which is dropped in Papanicolaou fixative. Another smear is made from the same area and also immediately fixed. This usually gives a cellular specimen of which approximately 90 per cent of the cells have large vesicular, well defined, and fixed nuclei. These may be stained within 15 minutes, or remaining in fixative, be referred to a laboratory for staining and interpretation. Many staining methods are used, all of them are satisfactory and the choice is usually dependent on the laboratory facilities available and the experience of the person doing the staining.<sup>11</sup> The Feulgen stain gives an excellent result because it is specific for DNA, and the very light background makes it easy to study the morphology of the red chromatin mass. The regular Papanicolaou stain may be used and is satisfactory if one realizes some of the drawbacks. Probably the most important is the densely-stained bacteria which sometimes obscure the chromatin or appear in the position of and mimic

a chromatin mass. Carbofuchsin is another acceptable stain, and has been used for several years in the laboratory of Doctor M. L. Barr. The slide is examined microscopically with the oil immersion lens and 100 acceptable nuclei are located. The vesicular nucleus must be flat and evenly stained. Approximately 30 to 80 per cent of the nuclei counted will contain a sex chromatin mass in a normal female.<sup>11</sup> The number of chromatin positive nuclei is often lower in buccal smears than in other preparations. One must be careful to recognize nuclei which have more than one nuclear chromatin mass because this indicates abnormalities associated with the number of X chromosomes. Factors which may alter the sex chromatin in buccal smears are age and antibiotic agents. The incidence of nuclei with chromatin masses may be extremely low in newborn females, the normal value usually being reached by the fourth day of life. A reversible reduction in the size of the sex chromatin mass may occur after oral administration of many different antibiotics. Chromatin positive nuclei may also be found in the cells of various organs, skin, in tissues from embryos and in smears prepared from the vagina of the female.

The sex chromatin mass, or Barr body, is derived from one X chromosome, and is genetically inactive. This "deletion" of an X chromosome provides dosage compensation in mammals. It does not occur in the germ cell line of the female. The number of masses seen in the interphase nuclei is dependent on the number of heterochromatic X chromosomes in the cell. This is always one less than the total number of X chromosomes in the cell<sup>6</sup> (figure 4).

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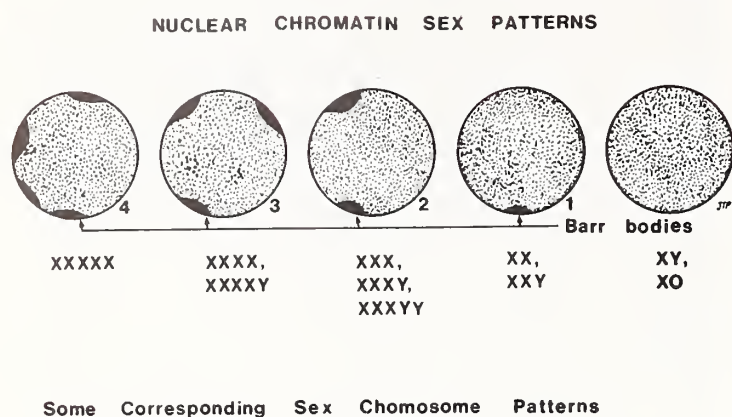


Figure 4. Nuclear chromatin sex patterns with some corresponding sex chromosome patterns.

Another technique for studying the nuclear sex of an individual is the so-called drumstick count of the neutrophils of the peripheral blood. A Wright-Giemsa stained peripheral blood smear is examined under the oil immersion lens. Five hundred neutrophils are examined in which 0.6 to 8.8 per cent contain a drumstick in a female. The incidence varies from one female to another and the reason for the variation is unknown. Drumsticks are more commonly found in the older or more segmented nuclei and when a large number of band or stab forms are present, they are difficult to find. When one counts six drumsticks, the configuration is that of a female and one may stop counting. If six are not found, 500 must be counted prior to making the statement that the examination is consistent with that of a male chromosome pattern. Although this test sounds simple and straight forward, some problems are associated with it. Probably the most common error made is identifying small clubs as drumsticks. Small clubs are present in both sexes and are often multiple in the same cell (figure 5a). They are equally frequent in bilobed and multilobed nuclei; they are quite small and oval and almost always retain a discernible chromatin pattern. It is very important that the smear not be overstained in order to fully appreciate this differential point. The drumstick is a single appendage. It is more common in multilobed nuclei, is large and spherical, dark and homogenous and almost always attached to the nuclear chromatin by a very thin stalk (figure 5b). One may see characteristic drumsticks in males, but no more than two per

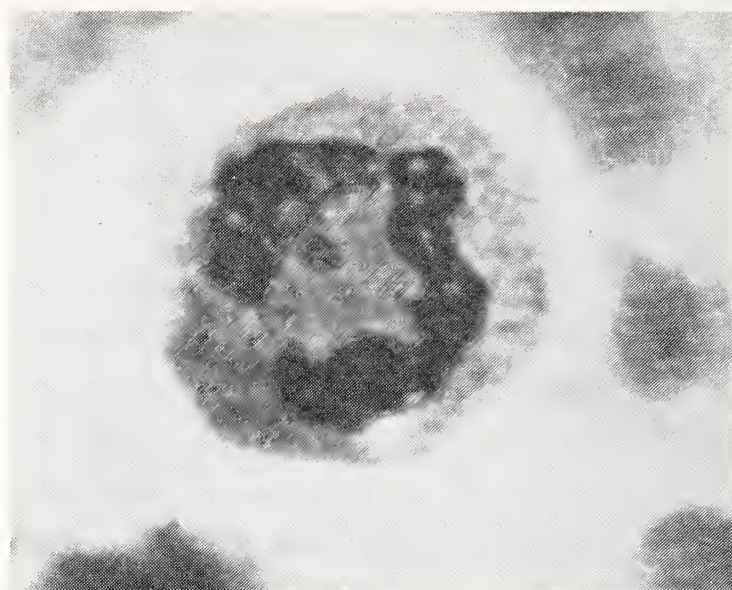


Figure 5a

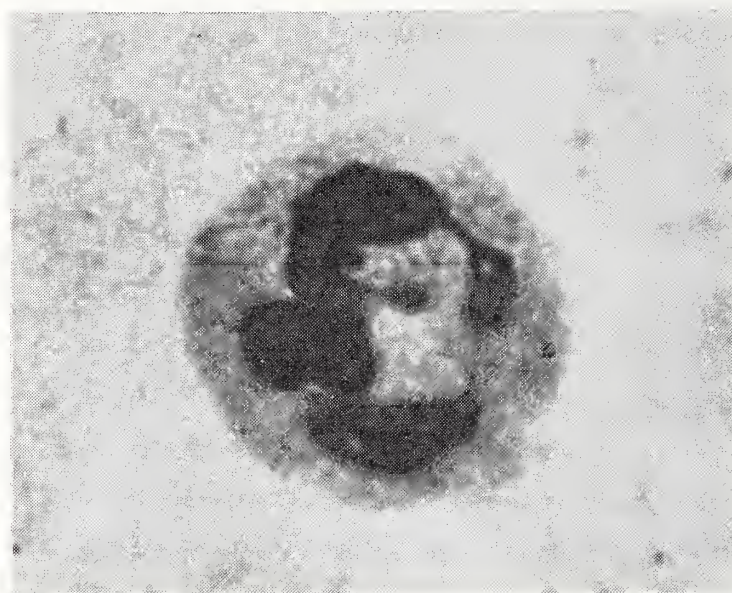


Figure 5b

Figures 5a and 5b. Photomicrographs of polymorphonuclear leukocytes which demonstrate the morphological characteristics of a drumstick (5b) and nuclear clubs (5a).

500 neutrophils should be found in a normal male. The blood smear evaluation is an adjunct to the buccal smear and should not be used alone as a definitive study of the number of X chromosomes in a patient.

The last technique in the cytogenetic laboratory workup of a patient is karyotyping. This term encompasses cell culture, preparation of chromosomes from these cells, arranging the chromosomes in order of descending size and dividing them into their seven major groups. This is an exacting technique and requires perseverance and patience. The material most commonly cultured is the peripheral blood because of its accessibility and the relatively large numbers of lymphocytes available which may be stimulated to divide. Skin and other organs can be cul-



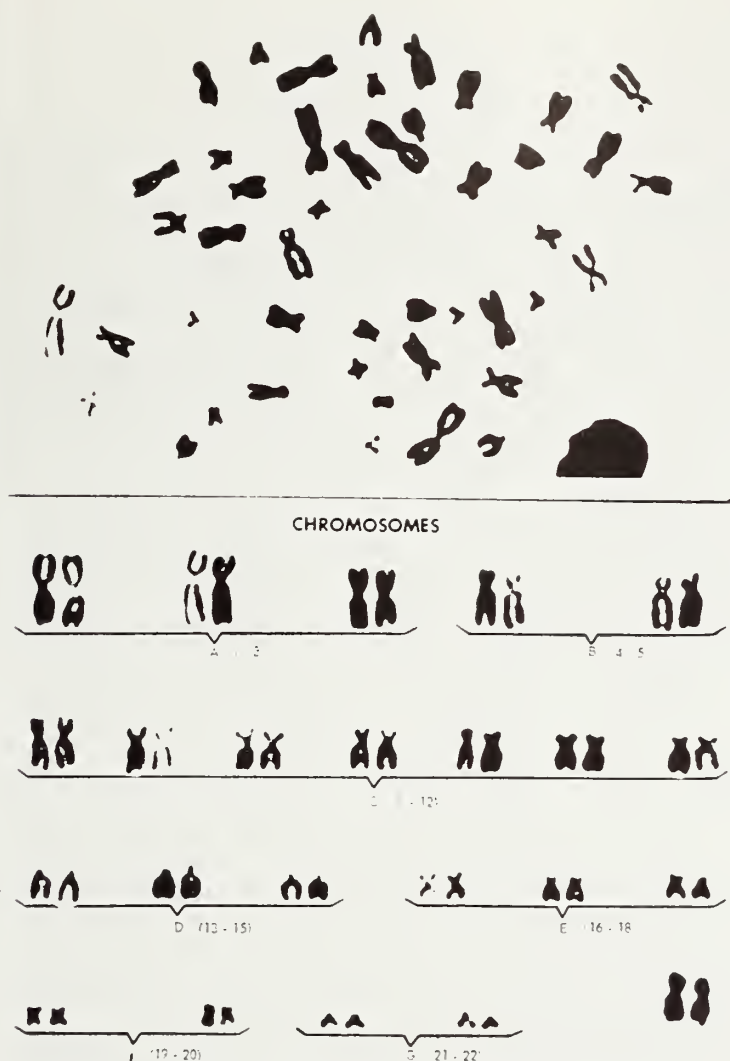


Figure 6. Karyotype of a normal female.

tured using specialized techniques and bone marrow has been used extensively. Although the cultures and chromosome preparations are time-consuming and are probably best performed in a specialized laboratory, a satisfactory specimen may be obtained without difficulty in the office or home. Transportation of the specimen to the laboratory has been greatly simplified recently by Eggen and others.<sup>1</sup> Blood is drawn into a 15 ml. heparinized screw-capped vial and without further manipulation, it is placed in a properly labeled mailing container and airmailed to the laboratory. Good results have been reported in karyotyping these specimens, and the minor difficulties are outweighed by the simplicity. At least a ten-day lapse between sampling and reporting should be allowed. The karyotype, or a copy of it, is usually included in the report which also contains a brief description of the chromosomes and an interpretation of the karyotype (figure 6). Specific diagnoses may be made in the case of autosomal abnormalities (Mongolism and Patau's syndrome, for example), in sex chromosome variants (Turner's and Kline-

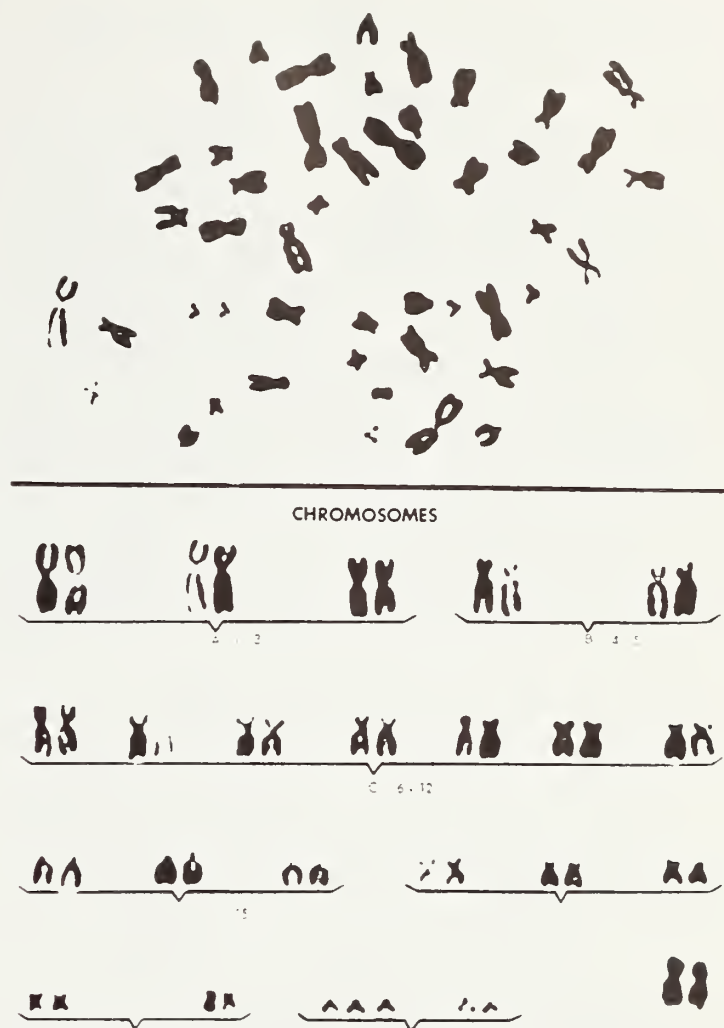


Figure 7. Karyotype of a female with the most common type of mongolism, trisomy 21. Note the five chromosomes in group G (normal component is four) in a female.

felter's syndrome and their variants), and in structural defects (translocations and deletions). A discussion of syndromes associated with chromosomal defects is most logically based on the abnormalities seen in the karyotype, since many of the clinical features are difficult to classify in an orderly manner. The three major groups of defects are: The autosomal trisomy syndromes, Klinefelter's syndrome and its variants, and Turner's syndrome and its variants.

Three identical autosomes rather than the normal pair is the characteristic of the autosomal trisomy syndromes. Mongolism, group D trisomy syndrome (Patau's syndrome) and group E trisomy syndrome (Edward's syndrome) are the only well established clinical syndromes associated with three identical autosomes. Mongolism (Mongoloid idiocy, Down's syndrome) was the first abnormality in man which was definitely ascribed to an autosomal abnormality. It is not rare, being present once in each 500 to 600 births.<sup>7</sup> The clinical features (pheno-



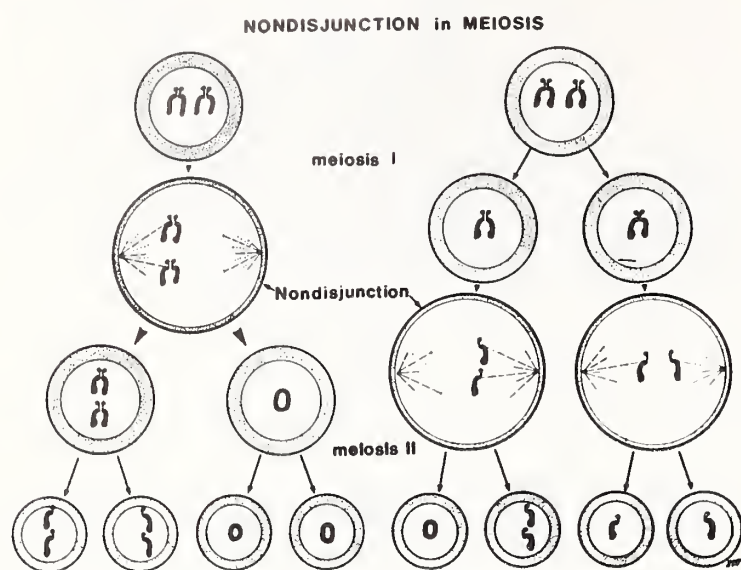


Figure 8a

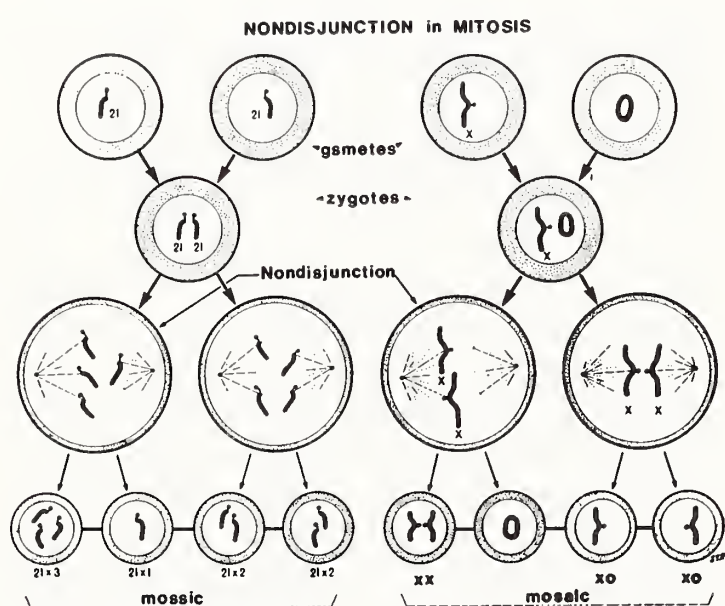


Figure 8b

Figures 8a and 8b. Accidents in mitosis and meiosis resulting in nondisjunction and an abnormal chromosome distribution in the cell.

type) of Mongolism are well known and represent the results of a triple representation of the genetic material of a G group chromosome (conventionally considered to be the 21st pair) rather than the normal double dose. The most common karyotype is trisomy-21, the cause of so-called sporadic Mongolism (figure 7). This syndrome is more common in offspring of mothers 35 years old and older. The karyotype is characterized by a modal number of 47 chromosomes with an extra chromosome in group G (five in females, six in males). This is thought to be the result of an accident during meiosis in the ovum or in the early cleavage stages of the zygote known as nondisjunction (figure 8). Translocation of chromosomes 15

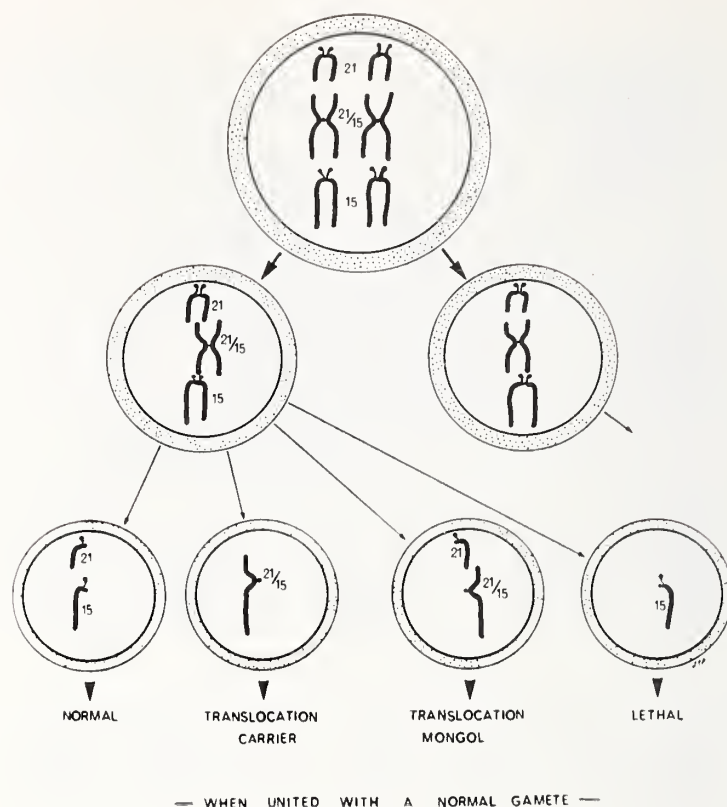


Figure 9. The possible results of pregnancy when gametes of a translocation carrier are combined with a normal gamete.

and 21 also results in Mongolism. There are 46 chromosomes with the normal complement of the G group, but only five members of the D group (rather than six), and the presence of a large chromosome composed of most of the genetic material of a D chromosome and a G chromosome (the translocation chromosome). Familial Mongolism is the result of this phenomenon and is more frequent in the children of younger mothers. There may or may not be a family history of Mongolism, and a history of repeated abortions may be elicited. Other translocation patterns (G/G) have been described. When the parents of a translocation Mongol are examined, it may be found that one parent has only 45 chromosomes. There is one 21 chromosome, one 15 chromosome and a translocation chromosome. Since the genetic material of the 21 chromosome is probably present in full amounts and certainly not in excessive amounts, the parent appears normal. Culture of the cells of the parents of the trisomy 21 Mongoloid child results in normal karyotypes. Such studies are important in counseling the parents of a Mongoloid child. In accidental nondisjunction there is an approximate 1:80 chance of a subsequent pregnancy being another Mongol, the translocation carrier however will have a chance of only one normal child in three



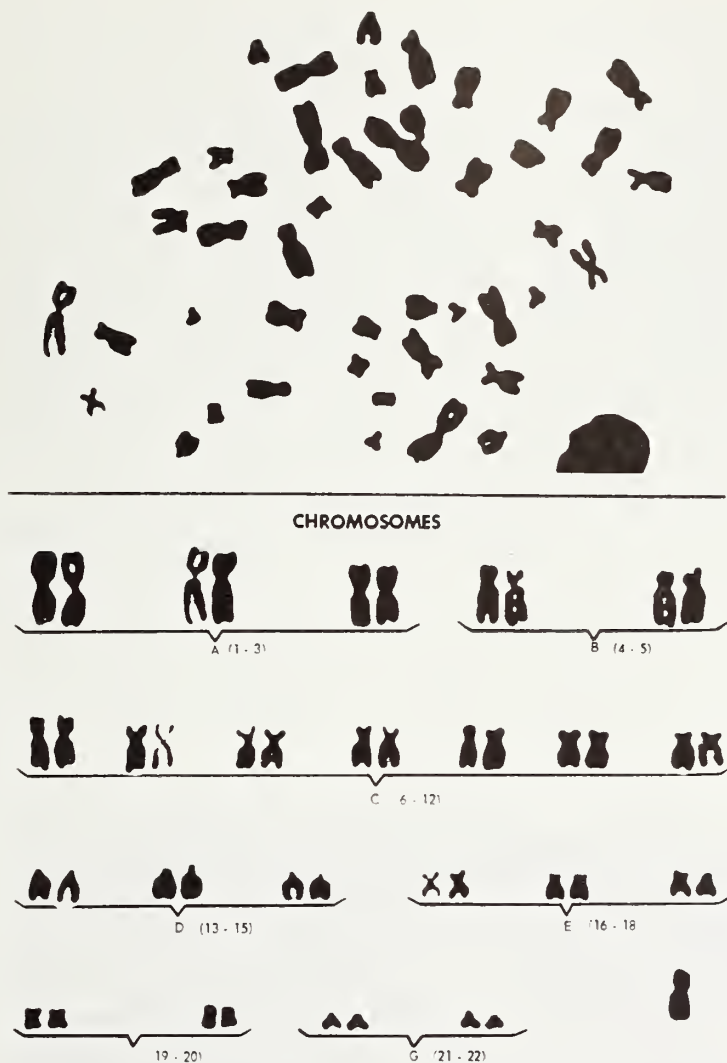


Figure 10. Karyotype of a patient demonstrating Turner's syndrome (X0). Note the presence of only 15 chromosomes in group C (one X).

term pregnancies (figure 9). Translocation *de novo* does occur, therefore the presence of a translocation chromosome in an infant should be a definite indication for karyotype studies of the parents. In rare instances, cell cultures of a 21 trisomy Mongoloid results in two karyotypes, one with a normal chromosome complement, the other showing the characteristic trisomy. Such a mixture is known as mosaicism and may result in a Mongoloid with some of the clinical features missing. Near normal intelligence may be a result of this situation. Mosaicism is more common in the sex chromosome variants.

Other autosomal trisomies do occur. The only two well defined clinical syndromes are the D trisomy (Patau's) syndrome and the E trisomy (Edward's) syndrome. The clinical features of both these have been well described and are listed in table II.<sup>9, 10</sup> Karyotyping should be performed when these clinical features are present because it permits an absolute and definite diagnosis. A recent case has been reported in

Table II Clinical Features of Two Autosomal Trisomy Syndromes	
Group D Trisomy	
Microphthalmia or anophthalmia	"Rocker Bottom" Feet
Malformed ears	Polydactyly
Cleft palate	Multiple hemangiomata
Harelip	Cardiac septal defects
Apparent mental retardation	Apparent deafness
Group E Trisomy	
Failure to thrive	Patent ductus arteriosus
Finger Flexion (2 over 3)	Moderate hypertonicity
Low, malformed ears	Apparent mental retardation
Short Sternum	Hernias (inguinal or umbilical)
Small mandible	
Interventricular septal defects	

which a phenotypically characteristic trisomy-18 infant showed a normal karyotype when its peripheral blood, skin and bone marrow were cultured.<sup>5</sup>

Anomalies of the sex chromosomes have been recognized for many years by their

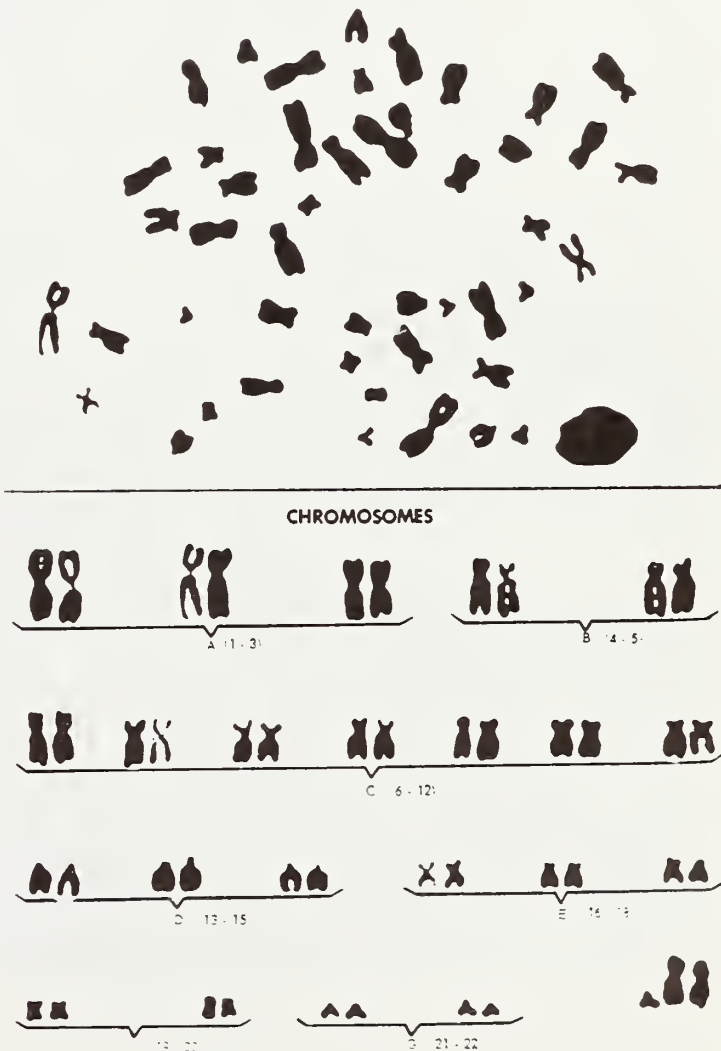


Figure 11. Karyotype of a patient demonstrating Klinefelter's syndrome (XXY). Note the presence of two X chromosomes as well as the normal male component (5) of the G group.



Table III

Various syndromes and their variants produced by abnormalities of the sex chromosomes. Victor A. McKusick, Human Genetics, (©) 1964. Reprinted by permission of Prentice-Hall, Inc., Englewood Cliffs, New Jersey.

Sex Determination				
	Sex Phenotype	Fertility	Number of Barr Bodies	Sex-Chromosome Constitution
Normal male	male	+	0	XY
Norman female	female	+	1	XX
Turner syndrome	female	—	0	XO
Klinefelter syndrome	male	—	1	XXY
Triple X syndrome	female	±	2	XXX
Triple X-Y syndrome	male	—	2	XXXXY
Tetra X syndrome	female	?	3	XXXX
Tetra X-Y syndrome	male	—	3	XXXXXY
Penta X syndrome	female	?	4	XXXXXX

clinical manifestations. Studies of the buccal smears, the polymorphonuclear leucocytes and the karyotypes of these cases have resulted in a great deal of information concerning the X chromosome, its genetic content, and knowledge concerning sex determination in humans.

Turner's syndrome and its variants are often diagnosed as the result of a patient seeking help because of a fertility problem. The XO configuration of the karyotype of these women is mirrored by an abnormal chromosome count, that is 45 chromosomes instead of 46, and by the absence of chromatin positive cells in the smears prepared from the buccal mucosa or the vagina (figure 10). They do not have six drumsticks per 500 cells in their peripheral blood. The clinical manifestations of this disease are fairly well known, the main features being female external genitalia, short stature, web neck, low set ears, a broad shield-like chest with widely spaced nipples and underdeveloped breasts, a small uterus and ovaries represented by fibrous streaks. This syndrome occurs about once in every 5,000 female births. Several theoretically possible mechanisms are present which might cause this condition and the accident of nondisjunction either in one of the two meiotic divisions in one of the parents or in an early mitotic division of the zygote is probably responsible (figure 8).

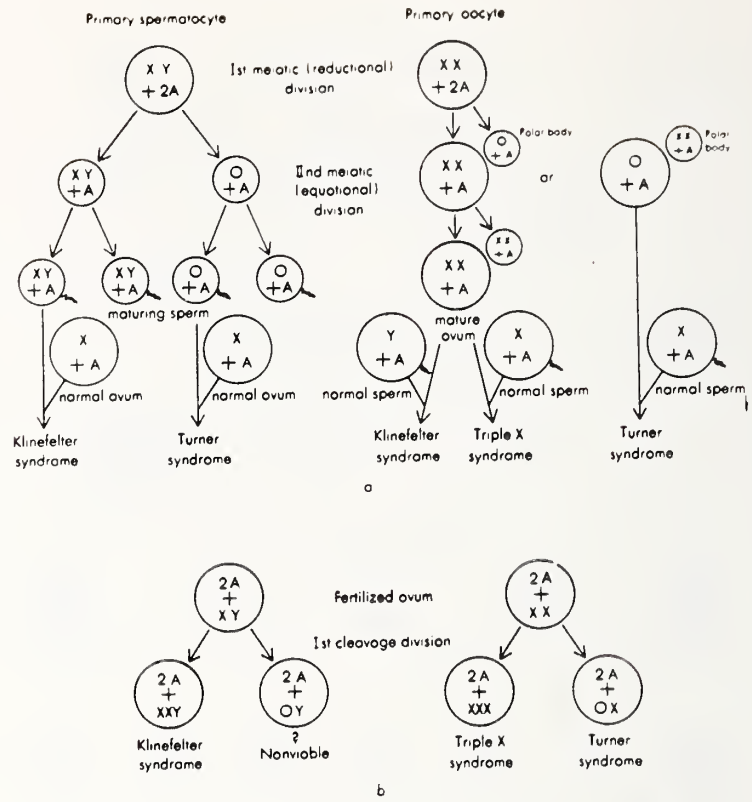


Figure 12. Possible pathways resulting in sex chromosome abnormalities. Victor A. McKusick, Human Genetics (©) 1964. Reprinted by permission of Prentice-Hall, Inc., Englewood Cliffs, New Jersey.

Klinefelter's syndrome occurs once in about every 400 to 600 male births and results in a phenotypic male with very small testes, gynecomastia, mental deficiency and unusually long lower extremities. The karyotype of these patients reveals 47 chromosomes and an XXY sex chromosome constitution (figure 11). The cells of the buccal mucosa are chromatin positive. The number of chromatin masses seen in somatic cells is one less than the number of X chromosomes present in the cell when a karyotype is done. Other syndromes associated with sex chromosome abnormalities are outlined in table III. Many other defects, most of which are variants of the more common syndromes, have been reported. Mechanisms which could explain the aneuploidy (without normal number) of the sex chromosomes in these syndromes are nondisjunction in gametogenesis or chromosome loss or nondisjunction in the zygote (figure 12). Structural defects other than the translocation described during the discussion of Mongolism, consist of other autosomal translocations, partial and incomplete autosomal trisomy syndromes, duplications, deletions and iso-chromosome formation. Many peculiar combinations of all these anomalies have been described in isolated instances. The resulting clinical features are seen so infrequently



that they warrant no further discussion in a general presentation.

Although the field of cytogenetics encompasses a great deal more than we have reviewed here, the more common abnormalities and their probable causes have been discussed. This has necessitated a brief review of normal cell division and a short description of some of the laboratory techniques which may be helpful in studying such patients. □

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# Mechanisms and Management of Lung Injury Following Blunt Trauma

LAZAR J. GREENFIELD, M.D.  
ROBERT T. NICHOLS, M.D.

*The mechanics of lung injury and the related pathology and physiology are discussed. Lung injuries are divided into three clinical classes and methods of treatment outlined.*

**ALTHOUGH** MAN'S technological progress now includes many methods of massive destruction, one of the most lethal weapons with which he has armed himself is the automobile which was responsible for over 53,000 deaths in 1966. Most victims of automobile accidents sustain blunt trauma to the chest, usually from contact with the steering wheel during deceleration. Multiple severe injuries are common but it is estimated that 25 per cent of deaths from automobile accidents are secondary to chest injuries and in one-fourth of these pulmonary contusion plays a major role.<sup>5</sup>

The clinical picture following blunt trauma to the chest varies from mild cough to severe dyspnea, hemoptysis, cyanosis, chest pain,

and shock. The terms applied to the more advanced stages include "traumatic wet lung," "stiff lung syndrome," and "pulmonary contusion syndrome." The clinical picture can be very deceptive with minimal signs early in the course progressing to severe respiratory insufficiency and death within six to eight hours. Mortality rates as high as 39 per cent have been reported,<sup>12</sup> but the salvage rate should be higher in this group of generally younger patients with treatment directed specifically to known physiological derangements.

## METHODS OF INJURY

The reported series of lung injuries following blunt trauma show differing percentages of antecedent automobile accidents, depending usually on the proximity of the hospital to a busy expressway.<sup>4, 11</sup> Other major sources of injury reported include falls, crush injuries, sports injuries, explosions, and nonpenetrating gun shot wounds.<sup>3</sup> The most common associated injury is fracture of one or more ribs often with penetration of the pleural space producing pneumothorax or hemo-pneumothorax. Other associated soft tissue and bony injuries are usually serious and contribute significantly to the reported mortality rates making interpretation of the mortality statistics more difficult.

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The effects of the sudden application of a force in terms of kinetic energy on the chest wall depend on several factors. Of particular significance is the elasticity of the thorax which provides a flexible cushion in youth but which steadily declines to a more rigid and brittle chest wall in the aged. By absorbing the kinetic energy, the thorax in younger patients is considerably more protective to the lung. In contrast, more rib fractures and instability of the thorax will result when the same force is applied to the older patient who is also handicapped by less pulmonary reserve.

The presence of a closed glottis at the time of compression trauma has been considered significant by many authors<sup>2, 14</sup> and serves to explain alveolar and major bronchial rupture from acutely increased intra-bronchial pressures. However, this factor is less important in blast injuries since Zuckerman<sup>17</sup> was able to protect animals from lung injury by protecting the chest with a sponge jacket even when a funnel was placed in the larynx and directed toward the blast.

The final factor which determines the extent of injury can be explained on the basis of the equation for kinetic energy (KE):

$$KE = \frac{\text{mass} \times \text{velocity}^2}{2}$$

It can be seen

that doubling the mass doubles the energy delivered while doubling the velocity quadruples the amount of force. This serves to explain why the larger and faster football player deserves so much more respect, why the hunting rifle bullet traveling at four times the speed of a pistol shot is so much more lethal, and why a speeding truck or train can do so much damage.

The response of the lung to trauma resembles that of any other organ in the body and includes parenchymal bleeding and interstitial edema. However, the onset may be insidious and within four to six hours of injury progress to a stiff, ecchymotic, and consolidated lung.<sup>4</sup> Microscopically alveolar hemorrhage with rupture of alveolar walls and small blood vessels, and transudation of serum into alveolar and interstitial spaces can be seen. The distribution of these changes depends on the anatomical extent

#### RESPIRATORY INSUFFICIENCY AFTER BLUNT TRAUMA TO THE CHEST

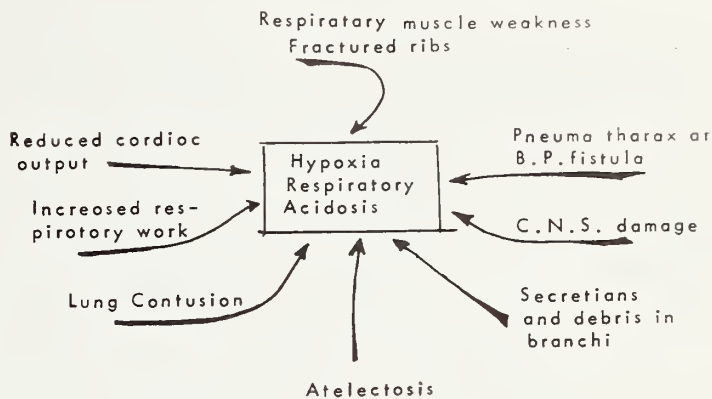


Figure 1. Factors which contribute to the respiratory insufficiency observed in patients following blunt trauma to the chest.

of injury and is not characteristically lobar. If the lungs are examined at autopsy they are quite heavy and consolidated, confirming the original term of "wet lung." An increase in mucoid secretions is usually observed which contributes to the atelectasis by plugging bronchioles. With elimination of these involved areas of lung as effective units of ventilation, shunting of unoxygenated blood occurs producing systemic hypoxia. These changes which result from an altered ventilation to perfusion ratio do not alter the more diffusable  $\text{CO}_2$  until larger lung volumes are affected. Autonomic reflexes then act to increase the respiratory rate and produce tachycardia. However, this increases the work of ventilation and oxygen consumption further impairing respiratory efficiency.<sup>13</sup> This impairment is exaggerated by the additional bronchial secretions, pain, inefficient cough, and decreased function of the thorax from trauma to ribs and respiratory muscles (figure 1). This combination of hypoxia and respiratory acidosis is bad enough, but if blood loss from associated injuries has occurred the problem of hypovolemic shock supervenes. This added insult reduces cardiac output and is associated with peripheral vasoconstriction producing a metabolic acidosis. Additional myocardial depression can result from direct injury to the heart which is detectable in about six per cent of cases<sup>4</sup> or from the systemic hypoxia if it is allowed to persist. Both hyperthermia and the transfusion of ACD blood contribute to the acidosis although obviously the blood volume must be replaced (figure 2).



CARDIOVASCULAR DETERIORATION AFTER BLUNT TRAUMA TO THE CHEST

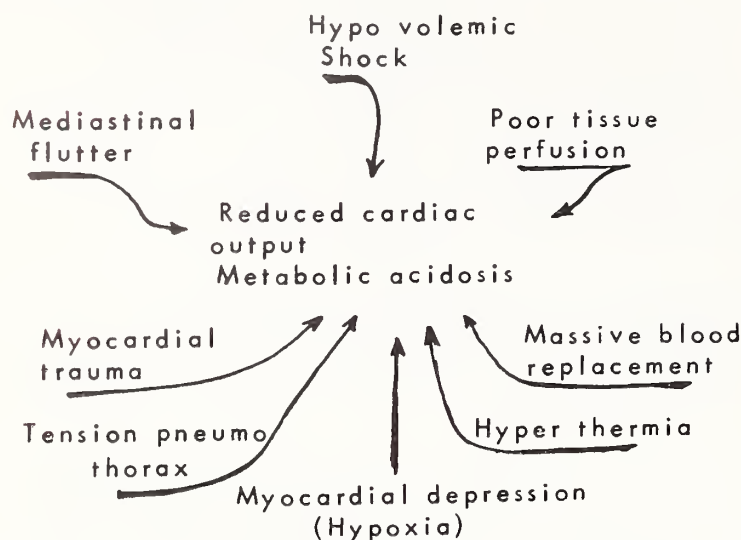


Figure 2. Related factors which add to the impairment of cardiac output and systemic acidosis observed in patients following blunt trauma to the chest.

Additional problems are created if blood or air enter the pleural space to reduce further the pulmonary reserve. The physiological effects of pneumothorax have been well studied and include a reduction in vital capacity and maximum breathing capacity affecting both lungs.<sup>7</sup> Although a decrease in pulmonary vascular resistance can be demonstrated experimentally in areas of collapsed lung, this does not occur clinically since the increased intrapleural pressure compresses the pulmonary vessels as well as the lung and does not allow the increased right-to-left shunting which is observed in atelectasis alone.<sup>15</sup> The presence of hemothorax is a much more severe complication and more likely to be associated with signs of shock.<sup>3</sup> The most lethal complication remains a tension pneumothorax which can occur from even a small tear of the lung acting as a ball valve permitting air to enter the pleural space during inspiration and preventing its escape during expiration. After collapse of the affected lung the mediastinum shifts compressing the opposite lung with severe dyspnea and interference with cardiac output. Decompression by immediate thoracentesis with a needle is a life saving measure and should always be performed as soon as the diagnosis is suspected rather than wait for radiographic confirmation.

The thoracentesis should be followed by insertion of a chest tube with underwater seal and suction to provide optimal lung expansion.

When rib fractures occur extensively on one side or bilaterally a flail chest occurs, sometimes referred to as "stove in" chest using a term from whaling days. In these cases the inspiratory effort produced by the patient with descent of the diaphragm is expended by the inward motion of the injured chest wall resulting in little or no ventilatory exchange. The increased work of breathing is accomplished only by increased negative pleural pressure changes which, in turn, cause more paradoxical motion of the chest wall. Speculation about the movement of gas from one lung to the other or *Pendelluft* was resolved by the work of Gaensler<sup>6</sup> who showed that upper airway obstruction was necessary for the crossover of air from one lung to the other. These observations emphasize the importance of tracheostomy in the management of crushed chest injuries. However, severe dyspnea and cyanosis result with hypoxia and hypercarbia unless the chest wall is stabilized to permit adequate ventilation. Stabilization can be accomplished by a variety of means on an emergency basis including towel-clip traction on ribs, but the most reliable and effective treatment is "internal stabilization" by means of a positive pressure respirator.<sup>1</sup>

Traumatic rupture of the diaphragm should be mentioned as an additional source of compression of lung tissue. Since the liver protects the right hemidiaphragm, compression trauma to the lower costal cage or upper abdomen can result in perforation of the left hemidiaphragm usually in the vicinity of the central tendon with incarceration and often strangulation of bowel within the pleural space.

#### RADIOGRAPHIC FINDINGS

Early chest films may show little or no signs of damage to the lung but with subsequent clinical deterioration two patterns can be seen:<sup>16</sup> The usual picture consists of one or more patchy densities which are irregular and conform to the area of injury with occasional contrecoup effect on the opposite lung. Less common is a linear peribronchial



infiltrate on the injured side. Signs of resolution usually appear after 72 hours but they may be delayed as long as eight days. Complete clearing is usually delayed for several weeks.

#### CLINICAL CLASSIFICATION AND TREATMENT

From a practical standpoint patients can usually be grouped into three categories:<sup>13</sup>

*Class I.* Patients in this group may demonstrate a pneumothorax or hemothorax but have no other serious injuries. They are alert and able to cough effectively to clear their secretions. On auscultation of the chest there is a good respiratory exchange and the vital signs are stable. If arterial blood gas determinations are performed they usually show a normal  $pO_2$ , pH, and  $pCO_2$  once the lung is expanded. The preferred method for expanding the lung with any hemothorax or significant pneumothorax consists of tube thoracostomy connected to underwater seal drainage and negative pressure of approximately 30 cm. of water. This provides optimal expansion of the lung, serves to clear the pleural space, and by careful observation of the rate of bleeding provides the earliest indication of the occasional need for thoracotomy. Survival usually approaches 100 per cent in these patients.

*Class II.* These patients have more serious pulmonary and other associated injuries. A lower level of consciousness prevails and the patient is unable to clear his own secretions. There is roentgenographic evidence of lung damage and arterial gas studies show a reduction in oxygen saturation. These patients require early tracheostomy and either assisted or controlled intermittent positive pressure breathing. Humidified oxygen helps to raise the arterial oxygen saturation and the assisted respiration serves to reduce the work of breathing. Control of body temperature to prevent hyperthermia is also of value particularly in cases of central nervous system injury. Patients in all categories benefit from the administration of broad spectrum antibiotics since contamination of the pulmonary hematomas is unavoidable. Obviously primary consideration must be given to treatment of the associated injuries which are life-threatening such as a ruptured viscus or head injuries. The expected

survival of patients in this category is approximately 63 per cent.

*Class III.* These patients are the most severely injured and they show early respiratory failure although patients in Class II can progress to this stage after several days. There is usually hypovolemic shock from associated injuries which demands early restoration of blood volume. A central venous pressure catheter is a valuable adjunct in the management of these patients. Arterial blood gas determinations usually show a decrease in  $pO_2$  and pH with increase in  $pCO_2$ . Early insertion of an endotracheal tube with control of respirations is usually necessary followed by tracheostomy and continued positive pressure controlled respirations using preferably a piston-type respirator such as the Emerson or Mörch. In use of the piston-type respirator, high inflation volumes which produce a peripheral paradoxical pulse should be avoided since they may produce lung damage.<sup>8</sup> In addition to previously mentioned therapy, patients in this group often benefit from the administration of large doses of steroids in an attempt to reduce secretions and interstitial edema.<sup>4</sup> These patients need high humidity oxygen in the range of 40 to 60 per cent concentration but hyperbaric oxygen therapy is to be avoided because of the danger of gas embolization. The survival rate in this group approximates 43 per cent.

Patients in any of the categories who show sustained blood loss through the tube thora-

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costomy in excess of 250 ccs per hour or who show persistent shock, mediastinal shift, or large clotted hemothorax persisting after tube drainage should be considered for early thoracotomy.<sup>10</sup> Similarly a large air leak without satisfactory expansion of the lung suggests major bronchial laceration with need for early thoracotomy and repair. Late complications are to be expected in most of the patients who survive and include atelectasis, pneumonia, empyema, pulmonary fibrosis, and occasional pulmonary edema. Experimental studies in this laboratory have confirmed the unique effectiveness of positive pressure respiration in reversing the altered ventilation perfusion ratios and allowing restoration of normal arterial blood gas values.<sup>9</sup> Early application of this therapy should improve survival rates. □

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# Immunization By the Inhalation Route Against Certain Biological Warfare Agents

MAJOR CHARLES W. DUTREAU  
Army of the United States—Retired

*This article was prepared in 1962 in much more comprehensive form, but publication has been deferred until now for security reasons. This revised and abbreviated version offers a belated preview of things to come in the area of preventive medicine.*

REPORTS OF fantastic biological warfare weapons have persisted in the Nation's press for the last 20 years. These have been discounted by some "authorities" and exaggerated by others until the public is pretty well confused. In military circles the subject has been so highly classified as to add to the confusion; however, it has been revealed that in 1958, field trials with a biological warfare simulant gave effective area coverage of about 30,000 square miles from the dispersal of 450 pounds of bacterial suspension sprayed through five-per cent-efficient nozzles. The same result could have been obtained with an aerosol spray carrying a pathogenic agent.<sup>1</sup>

It appears that improved technology may have given potential enemies of the United

States a present capability to disperse biological warfare agents containing millions of organisms per ml in the form of 90-per cent-efficient aerosols; that is, 90 per cent of the particles are in the sub-five-micron range and readily enter and remain in the alveoli. It has been argued that the theoretical effective coverage from 450 pounds of agent is on the order of 540,000 square miles, or almost eight times the area of Oklahoma.

Conventional public health measures would be ineffective in the prevention of casualties from an aerosol-type biological warfare attack. Victims having received a lethal alveolar dose of certain agents would be beyond medical help after symptoms began. The median infective alveolar dose of some agents may be on the order of one or two organisms for nonimmunized individuals.

Certain nations not friendly to the United States have a very high biological warfare capability. It is believed that biological warfare poses a serious threat to unprotected civilians in any global war in the future.

Strategic defense measures against this threat include 1) *early detection*, 2) *rapid identification* and 3) *warning*. Positive identification of certain agents now can be made in a matter of hours by the use of fluorescent microscopy techniques in connection with around-the-clock operation of air sampling stations. However, in our present state of unpreparedness, it is likely that an

Opinions expressed herein are those of the author and do not necessarily reflect the official views of the Department of Defense.



enemy biological warfare attack first would be discovered by the appearance of clinical cases.

The key civil defense measure against biological warfare is the prevention of exposure to an effective dose of agent through use of protective masks and filtered-air ventilating systems in buildings; however, such measures become cumbersome when applied on a mass population basis. Immunization is by far the most practical method of protecting large numbers of people for long periods of time.

#### MASS IMMUNIZATION

For many years, some researchers in the U. S. Army Chemical Corps have believed that mass immunization of humans against certain infectious diseases may be accomplished by the inhalation of suitable immunizing agents. This belief is supported by numerous reports of induced immunity in animals following contact with diseased or immunized individuals.

Hitchner and Reising in 1952 found definite induced immunity to Newcastle's disease in chickens. Corham, Leader and Gutierrez have observed similar immunity to distemper in ferrets and mink.<sup>2</sup>

Cabasso, *et al.*, report intrafamilial spread of polio virus following the ingestion of oral vaccine by a family member. In one study, this spread amounted to 68 per cent of the siblings and eight per cent of the mothers for Type 1, 16 per cent of the siblings and

no mothers for Type 2, and 60 per cent of the siblings and 44 per cent of the mothers for Type 3.<sup>3</sup>

There is reason to believe that in many instances the immunizing agent may have passed from animal to animal or from person to person by the inhalation route.

As early as 1958 the Soviet Union conducted extensive research in immunization by the inhalation route against plague, tularemia, brucellosis and anthrax. In a study of anthrax immunity in sheep, the Russians found that an immunizing agent administered by inhalation was more effective than the same agent administered by other routes. They report the following results:<sup>2</sup>

Route of Anthrax Immunization	Mortality
Control	73.3%
Percutaneous	16.3%
Subcutaneous	5.0%
Inhalation	3.3%

These same Russians extended their studies to human beings. Dried anthrax spores (an attenuated strain) were sprayed into a room having a volume of 1,200 cubic feet. Three hundred persons per hour were shuttled through this room and permitted to breathe the immunizing agent for five minutes. Immunity was measured by development of specific agglutinins.<sup>3</sup>

It seems that the time has come for intensive investigation in the United States of the feasibility of immunization by the inhalation route against a broad spectrum of infectious diseases. Until recently we were limited by the inability to produce aerosols having the required particulate size, but that limitation now has been removed.

It is likely that an enemy's biological warfare agents of preference for dissemination as aerosols would include anthrax spores, *Pasteurella pestis*, and botulinum toxin.

Annual parenteral inoculation of animals in enzootic areas with an approved vaccine seems to be effective in the control of epidemic anthrax. A newly developed cell-free antigen shows promise as an immunizing agent in the prevention of cutaneous anthrax in man. Vaccines prepared with living, avirulent strains of *Pasteurella pestis* may confer satisfactory immunity in one dose if repeated yearly.<sup>4</sup> Immunization against botulinum toxin presently is under development.

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*A native Oklahoman, Major Charles W. Dutreau served with the U.S. Army as Civil Defense Officer during World War II. Following the war, he was assigned as Research Engineer at the Army Chemical Center, where he conducted early studies in the toxicity of nerve gases and other new chemical agents. Later he served as Staff Chemical Officer in the Korean Theater of Operations. After his retirement he was appointed to the Staff of the Oklahoma Commissioner of Health as Radiological Defense Officer and Director of Emergency Health Services, positions which he still holds.*



Russian studies seem to show that aerogenic vaccination of man with standard immunizing agents is innocuous and that the agglutinin response is as good, or better, than in those individuals vaccinated dermally. It is believed that these techniques, if fully developed and applied to a broad spectrum of infectious diseases, might bring prodigious advances in the area of preventive medicine. ☐

NOTE: Reprints of this article and a comprehensive bibliography covering the literature on the subject are available on request from:  
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# Epidemiologic Study on Reported Human Tularemia in Oklahoma, 1944-65

NABIH R. ASSAL, M.S.P.H.  
ROBERT D. LINDEMAN, M.D.  
R. LEROY CARPENTER, M.D.

*Tularemia is known to be endemic  
in the eastern counties of Oklahoma.  
The disease is transmitted more often  
by infected ticks than by wild rabbits.*

## INTRODUCTION

**T**ULAREMIA is primarily a disease of animals caused by *Pasteurella tularensis*. Man may become infected by handling carcasses of infected rabbits, rodents or through contact with arthropod vectors such as ticks, deerflies, or fleas.<sup>1</sup> In 1911 McCoy and Chapin reported isolation of the causative organism in squirrels and named it after the place where it was first recognized, Tulare County, California.<sup>2</sup>

Tularemia has been known under many names such as "deerfly fever," or "rabbit fever" depending on the circumstances in which it has been encountered.<sup>1, 3</sup> Very little has been published about tularemia in Oklahoma. However, published reports from the neighboring states of Arkansas and Missouri indicate a high incidence of the disease in this part of the country.<sup>4, 5, 6, 7</sup> A look at the problem in Oklahoma is warranted. The purpose of this study is to bring together the information available on tularemia in Oklahoma in order to document the epidemiology of the disease here. Hopefully this

will aid physicians in its recognition as a significant local medical problem.

## SOURCE OF DATA

The data in this report were obtained from 792 human cases of tularemia reported to the Oklahoma State Health Department, Oklahoma City, Oklahoma, during a period covering 22 years (1944-65). All the blood specimens sent by practicing physicians to the State Health Department Laboratory for the purpose of detecting positive tularemia antibody titers were reviewed for a five-year period (1961-65). The reports were analyzed for all available information such as case fatality rates, geographical distribution, seasonal distribution, age, sex, and race.

## RESULTS

The annual total reported human cases of tularemia in Oklahoma (table 1) ranges from as low as ten cases per year (1944, 1961, 1965) to as high as 130 cases per year (1947). When one compares five-year periods, a noticeable decline in reported cases is observed (table 1).

The geographical distribution of reported human cases of tularemia by county of residence of the patient indicates that most of the cases were reported from the eastern third of the state (figure 1). No cases were reported from 13 counties located in the western half of the state during the 22-year period covered by the study.

The seasonal distribution of tularemia in Oklahoma shows two separate peaks. The first peak is in the May-July summer period,

From the Department of Preventive Medicine and Public Health, University of Oklahoma School of Medicine, Oklahoma City, Oklahoma.



Table 1

Reported Human Cases of Tularemia in Oklahoma (1944-65)

Year of reporting	Number of cases	Number of deaths	Case fatality rate (Per Cent)
1944	10	1	
1945	25	4	
1946	86	2	
1947	130	1	
1948	84	3	
Total	335	11	3.3
1949	71	N.A.	
1950	61	0	
1951	52	0	
1952	38	0	
1953	28	0	
Total	250	1	0.4
1954	35	0	
1955	15	2	
1956	15	0	
1957	25	0	
1958	17	0	
Total	107	2	1.9
1959	17	0	
1960	13	1	
1961	10	0	
1962	13	0	
1963	16	0	
Total	69	1	1.5
1964	21	0	
1965	10	0	
Total	31	0	0.0
Grand Total	792	15	1.9

and the second, smaller peak is in December. Though cases were reported in every month of the year, the summer months of May, June, and July accounted for nearly 40 per cent of the cases.

Cases were seen at all ages with a peak at 35 to 44 years of age (table 2). Males were affected in 65.9 per cent of the cases and females in 30.1 per cent (table 3). The Indian population of Oklahoma experienced a higher rate (87.8 per 100,000 population) than the whites (21.4) or the Negroes (17.4) (table 4).

Tularemia agglutination titers were positive for 111 cases analyzed over a five-year period (1961-65), (table 5). Only 40.5 per cent or (45/111) of these cases were reported to the State Health Department. The unreported cases did not contribute to the annual tularemia report during these five

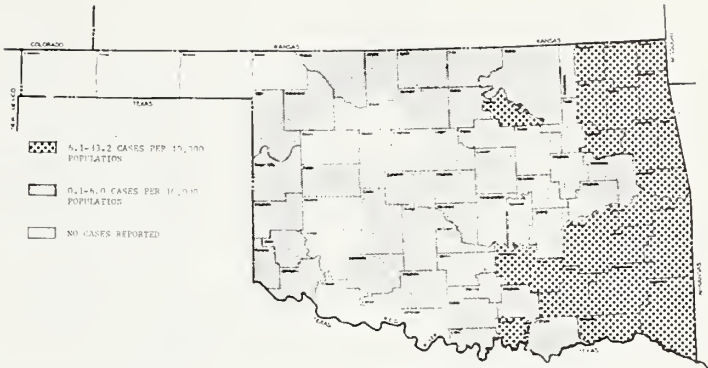


Figure 1. Geographical Distribution of Tularemia in Oklahoma, 1944-65.

years. Furthermore, 25/70 cases reported during the five years (table 6) were not confirmed by an agglutination test by the State Health Department Laboratory. A decline in case fatality rates from 3.38 per cent during the first five-year period (1944-48) to 1.45 per cent during the last five-year period (1959-63) was observed.

DISCUSSION

Tularemia is perpetuated in nature by way of a mammalian cycle with the tick serving as the chief agent in maintaining the disease in the animal population.<sup>8</sup> Infected ticks have been recovered in nature and it has been possible to demonstrate the trans-

Table 2

Distribution of Reported Human Cases of Tularemia by Age (1944-66)

Age (years)	Cases	
	Number	Per Cent
Under 10	28	3.6
10-19	67	8.5
20-34	92	11.6
35-44	102	12.9
45-54	73	9.2
55-64	62	7.8
65-74	31	3.9
75-100	6	0.8
Unknown	331	41.7
	792	100.0

Table 3

Reported Human Cases of Tularemia in Oklahoma by Sex (1944-65)

	Males	Females	Unknowns
Number of cases	522	238	32
Per Cent of cases	65.9	30.1	4



Table 4  
Reported Human Cases of Tularemia in Oklahoma  
by Race (1944-65)

	Whites	Negroes	Indians	Unknowns
Number of cases	482	26	52	232
Per Cent of cases	60.8	3.3	6.6	29.3
Rates/100,000	21.4	17.4	87.8	****

Table 5  
Physician Reported Cases of Laboratory Confirmed  
Tularemia (1961-65)  
Positive Agglutination Test 1:80

Year	Total	No. Reported	Per Cent
1961	14	6	42.9
1962	19	8	42.1
1963	20	9	45.0
1964	46	16	34.7
1965	12	6	50.0
Total	111	45	40.5

ovarial passage from adults to larva experimentally.<sup>9</sup>

In 1929, Hansen and Greer described seven human cases of tularemia in Minnesota and presented evidence of transmission by the tick *Dermacentor variabilis*.<sup>10</sup> Saliba and associates<sup>11</sup> reported that the American dog tick, *Dermacentor variabilis*, was the principal vector of the disease in 12 cases of human tularemia diagnosed during the summer of 1964 in South Dakota. They also observed that a high percentage of sera from horses and dogs was found to have tularemia agglutination antibody titer. Presumably the infection had been introduced by ticks.

Boston and associates<sup>4</sup> studied 54 human cases of tularemia from the Ozark region of Missouri and Arkansas and found that the majority of the cases were contracted during the summer months with tick bites accounting for 63 per cent of the cases. In another study by Callaway and associates,<sup>5</sup> ticks accounted for 69 per cent of the cases studied. Latest reports from Arkansas show that in 1965 alone 75.3 per cent of the cases were transmitted by ticks with the rabbits accounting for only 7.5 per cent.<sup>6</sup>

The rabbit, especially the cottontail, *sylvagus spp.* also is an important cause of spreading the disease, at least in the West-

ern parts of the United States. In one report, 90 per cent of the human cases in North America were claimed to have resulted from wild rabbits.<sup>12</sup>

Other insects besides ticks may perpetuate the disease. In Russia, where the disease reaches epidemic proportions, mosquitoes and horse flies play an important part in the spreading of tularemia.<sup>13</sup> Fleas and lice are additional spreaders of the disease, especially among the rodent population.<sup>8</sup>

Tularemia organisms have been found in streams inhabited by infected rodents, thus introducing another potential source of infection for humans.<sup>14</sup> Kavpoff and Antonoff<sup>15</sup> reported on 43 cases from Russia in natives who drank unboiled water from a brook thought to have been contaminated by water rats. The association of stream infection with epizootics occasionally observed in beavers was suggested. The dangers of infection from melting snow and rain contaminated with animal carcasses and later stored for human and animal use are emphasized by Bow and Brown as possible sources of water-borne tularemia in Western Canada.<sup>16</sup> A case of tularemia due to infection while cleaning fish is reported in the literature.<sup>17</sup>

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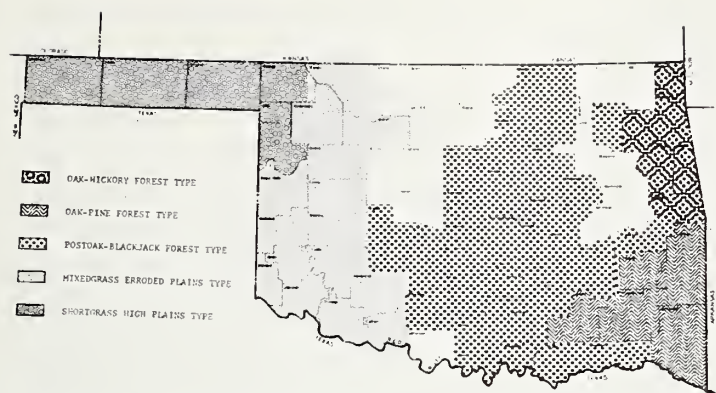


Figure 2. Generalized Vegetation Map of Oklahoma.\*

\*Data acquired from the Game and Fish Department map of Oklahoma, 1947, Game and Fish Department, State of Oklahoma.

In the (1959-63) period, only eight states reported more tularemia cases than Oklahoma, three of which border the state. For the same time period, the four state area of Arkansas, Missouri, Kansas and Oklahoma, reported about 37 per cent of the U.S. cases. Arkansas had the largest number of reported cases with about 20 per cent of the

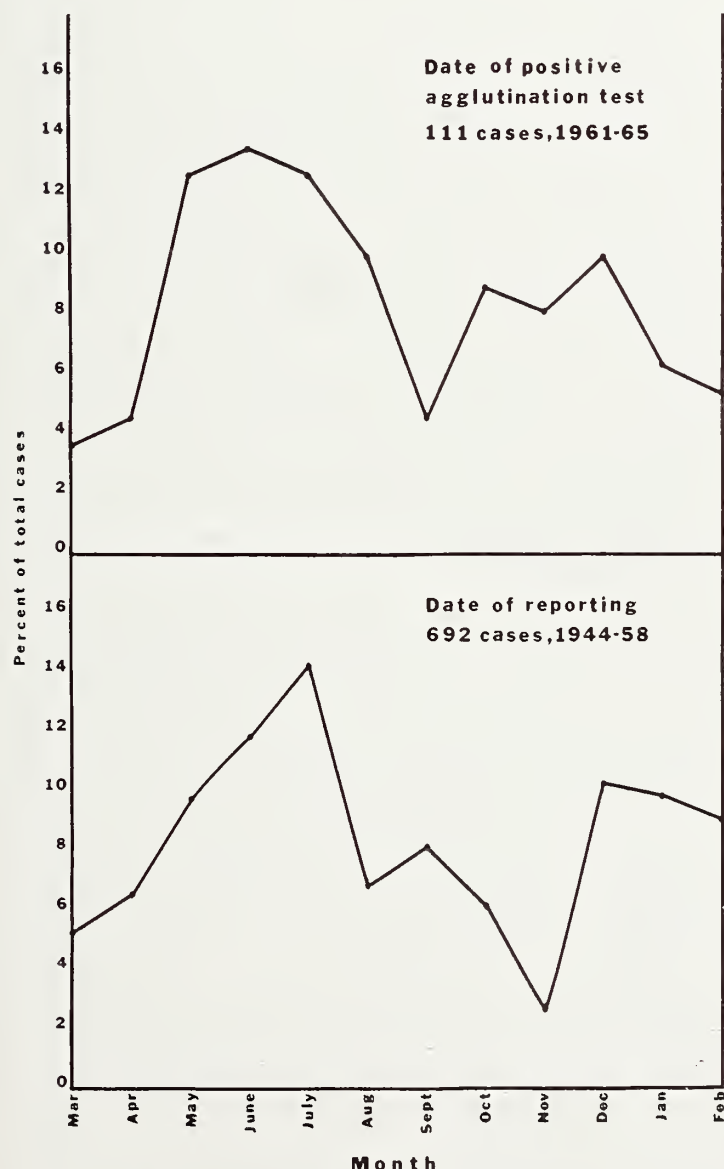


Figure 3. Seasonal Distribution of Reported Human Cases of Tularemia in Oklahoma.

total cases. These four states reported more than 50 per cent of the cases in 1963.<sup>8</sup>

When a physician sends a blood specimen to the State Health Department Laboratory and it is found to be positive for a certain disease, the results are mailed back to this physician for evaluation. Our study shows that only 40.5 per cent of these cases were reported back to the State Health Department as confirmed cases of tularemia. Since the agglutination test is rarely positive at 3-4+ levels unless a person has had a recent case of tularemia, this suggests that under-reporting of cases is a significant deficit in this study. Assuming that most of the tularemia cases were accounted for by the agglutination test, then we would have expected Oklahoma to report during the five-year period at least 111 cases instead of the 45 cases that were reported in Oklahoma from 1961-65.

In a similar study in the neighboring state of Missouri,<sup>7</sup> Greene county reported five human cases of tularemia during a 17-year period studied. The literature<sup>5</sup> contains a discussion of 78 cases from Greene county, Missouri over a five-year period covered by the 17-year Missouri study. These cases were not reported to the Missouri State Health Department. The decline in reporting may not be a true picture of the disease as is the case in Missouri.

The high incidence rate among the Indian population of Oklahoma may be explained by the fact that the Indians experience a much higher risk of exposure to ticks because of the location of their homes in the heavily vegetated area and the higher Indian population in the endemic area. Caucasians and Negroes generally reside outside these areas in Oklahoma. Similar observations have been made in South Dakota.<sup>11</sup> Also, hunting has always been an important Indian activity.

The area of high tularemia reporting and probably high incidence are the areas highest in tick population. These are characterized by acid sandy soil under oak-hickory-pine forests or tall grasses (figure 2). It is also of interest to note that the areas lowest in tularemia reporting (the Western half of Oklahoma) are typified by short grassy plains. The rabbit population, although distributed over the state, is heaviest in the Western parts of the state.



Table 6

Laboratory Data Available at Oklahoma State Health Department on Cases of Tularemia Reported by Physicians (1961-65)

Year	Positive Agglutination test 1:80 (3,4-)	No test available	Total cases reported
1961 -----	6	4	10
1962 -----	8	5	13
1963 -----	9	7	16
1964 -----	16	4	21
1965 -----	6	4	10
Total -----	45	25	70

The seasonal distribution of tularemia (figure 3) is usually associated with hunting and outdoor recreation periods and with deerfly and tick seasons. The winter peak seems to coincide with the rabbit hunting season (November-January) and with the deer hunting season (November 19-27). The age distribution of tularemia (table 2) is affected by the exposure potential to ticks, to outdoor activity, and to direct contact with rabbits.

The discovery and effective use of streptomycin and other antibiotics is credited with the decline in case fatality rate. Immunization with live vaccine is quite effective in preventing tularemia in populations of high risk, such as people who reside in endemic

areas,<sup>18</sup> and other occupationally exposed groups.<sup>19</sup>

## SUMMARY

A total of 792 cases of tularemia have been reported to the Oklahoma State Health Department during the 22-year period studied (1944-65). These cases form the basis for an epidemiologic study. The epidemiologic patterns of the disease reported are undoubtedly influenced to a certain degree by reporting bias. It seems that the Indian male residing in the Eastern third of the state is most prone to exposure and eventual infection with tularemia. Ticks during the summer and rabbits during the winter appear to be the primary vectors responsible for transmitting the disease to man. The availability of effective antibiotics has made death from tularemia a rarity. □

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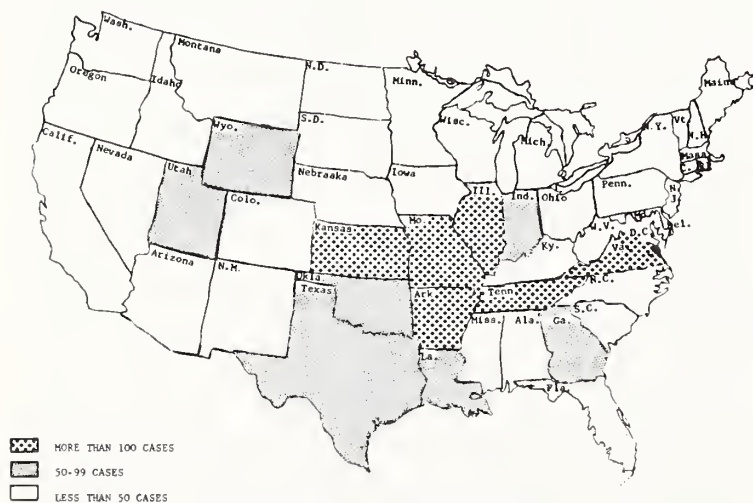


Figure 4. Distribution of Reported Human Cases of Tularemia in the United States, 1959-63.\*\*

\*\*Data acquired from reference 8.



## ABSTRACTS

### STRANGULATION AS A METHOD OF HOMICIDE

Strangulation accounts for five to ten per cent of criminally violent deaths in New York City, which has 600 homicides per year among its 90,000 annual deaths. During the period 1965-66 other means of homicide included: Shooting, 33 per cent, death by stabbing, 39 per cent, and death by assault, 28 per cent.

The author discusses 25 cases of strangulation autopsied at the office of the Chief Medical Examiner in New York City and correlates them with the clinical information. The cases were grouped as follows: 1. manual strangulation (seven), 2. manual and ligature strangulation (two), 3. ligature strangulation (six), and 4. strangulation without external injuries to neck (ten).

In cases of manual strangulation there were grouped fingernail abrasions on the neck in all cases, fracture of the hyoid bone alone (two cases), fracture of thyroid cartilage alone (two cases) and fracture of both structures (three cases). In cases of strangulation by ligation there were no hyoid bone or cricoid cartilage fractures present. There was a focally abraded furrow in all cases. In cases of strangulation without external neck injuries there were cases of fracture of cricoid cartilage, thyroid cartilage and hyoid bone.

In all but two cases there were interstitial hemorrhages in the region of the hyoid bone and laryngeal trauma. In these two cases there were submucosal laryngeal petechiae. In half of all the cases there were petechiae of the head and neck, more often in the conjunctivae and where a ligature had been used.

In only three cases were the deceased and perpetrator strangers and in each of these the motive had been robbery with homicide incidental to it. Of interest, in every case where an apparently robust adult male was strangled, he had been under the influence of alcohol.

Of all forms of traumatic homicide, strangulation is the hardest to detect. The author cites several cases in which, without an autopsy, the death might have been attributed to a medical cause.

**Reviewer's note:** This is a very interesting and quite informative article. The reviewer was somewhat surprised, based on her TV experience, that there were only 600 homicides per year in New York City.

Strangulation as a Method of Homicide: James L. Luke, M.D., *Arch. Path.* 83: 64-70, 1967.—*Carmen E. Bloedow, M.D.*

### SCREENING FOR ASYMPTOMATIC BACTERIURIA

The authors describe the use of a screening test for bacteriuria among pregnant outpatients in an antepartum clinic. The prevalence of bacteriuria was 6.6 per cent in agreement with other studies. Its presence is associated with increased morbidity; it may persist following delivery and may be associated with active

renal disease. Approximately 50 per cent of pregnant women with asymptomatic bacteriuria develop an asymptomatic urinary tract infection.

Routine screening for bacteriuria is desirable but often avoided because of the expense. The Griess test, which was used as a screening test, is a reagent which reacts with nitrites to form a red azo dye. Urinary tract infections due to coliform organisms reduce nitrite in the bladder urine to nitrite. The authors correlated the use of the Griess test with bacterial colony counts. They found that the Griess test was positive in 81 per cent with bacterial colony counts of  $10^5$ ; 0.7 per cent of the sterile urines gave a positive Griess test. The test was not so effective in hospitalized patients—this was attributed to a nitrate deficient diet and urinary tract infections with organisms that are not nitrate reducers. They also compared the Griess test with the STAT-test and found that the Griess gave better screening results of the two (80 per cent as compared with 73 per cent).

**Reviewer's note:** The authors recommend the use of the Griess test as part of antepartum care. Its use is simple—one ml. of the reagent is added to one ml. of the urine and has been shown to detect 80 per cent of the patients with significant asymptomatic bacteriuria.

Screening for Asymptomatic Bacteriuria During Antepartum Care. Merrill, J. A., Colmore, John P., Wilkerson, R. G., Braden, B. F., and DeShan, P. W., *Am. J. Obst. & Gynec.* 99(2): 216-220, 1967.—*Carmen E. Bloedow, M.D.*

### RECENT PUBLICATIONS

The *Journal* welcomes the opportunity to list current publications by any Oklahoma physician.

Antitussive effect of ethyl dibunate in patients with chronic cough. Sevelius, H. and Colmore, J. P., *Clin. Phar. and Therap.*, St. Louis 8(3): 381-384, 1967.

Screening for asymptomatic bacteriuria during antepartum care. Merrill, J. A., Colmore, J. P., Wilkerson, R. G., Braden, B. F., and DeShan, P. W., *Am. J. of Obstetrics and Gynecology*, 99(2): 216, 1967.

Questions and answers: Acetone odor to breath. Riley, Jr., H. D., *J.A.M.A.*, 200: 145, 1967.

Psychoanalytic theory as it relates to adoption. Schechter, M. D., *J. of Am. Psychoanalytic Assoc.*, 15(3): 695, 1967.

Asphyxial deaths by hanging in New York City—1964-1965. Luke, J. L., *J. Forensic Science*, 12: 359, 1967.

Acute effects of cortisone and aldosterone on urinary divalent cation excretion. Lindeman, R. D., Honari, Jr., and Smith, W. O., *American Society of Nephrology*, 1st Annual Meeting, Los Angeles, October 18-19, 1967, p. 38. □



# Books As Clinical Tools

## CLINICAL REFERENCES IN PEDIATRIC CARDIOLOGY

W. M. THOMPSON, JR., M.D.

The subject of heart disease in infants and children is of great clinical interest, primarily for two reasons. It is now possible to establish accurate functional and anatomic diagnoses and to correct or ameliorate many of the abnormalities. As an additional dividend, methods used to establish the diagnosis have furnished both qualitative and quantitative data as to details of cardiac function in the intact human. Interest in this field is of rather recent vintage among clinicians, congenital malformations being considered pathologic curiosities fit primarily for CPC discussions until the late 1930's.

In 1936, Maude Abbott<sup>1</sup> published the first general material on the subject, a pathologic review of 1,000 cases. This is the classic review of the pathologic anatomy of congenital heart disease; subsequent studies have served to revise anatomic and physiologic correlations.

In 1947, Helen B. Taussig published the first broad general text confined to this subject.<sup>2</sup> This was a meticulous, clinical and anatomic study of congenital malformations, and firmly placed pediatric cardiology as a clinical discipline. Rapid advances since that time have produced a voluminous bibliography. Fortunately, there are now four general text books on the field published in this country. These include:

Taussig, H. B., *Congenital Malformations of the Heart*<sup>2</sup>

Nadas, A. S., *Pediatric Cardiology*<sup>3</sup>

From the Department of Pediatrics, Children's Memorial Hospital, University of Oklahoma Medical Center, Oklahoma City, Oklahoma.

One of a series sponsored by the Department of Continuing Education, University of Oklahoma Medical Center.

Keith, J. D., Rowe, R. D., and Vlad, Peter, *Heart Disease in Infancy and Childhood*<sup>4</sup>

Gasul, B. M., Arcilla, R. A., and Lev, M., *Heart Disease in Children*<sup>5</sup>

Of these, three are published in second editions. They are all comprehensive texts, and in general, follow the same format. The initial chapters in each present general considerations including incidence, embryology, history and physical examination, electrocardiography both scalar and vector, radiologic aspects, and more specialized diagnostic procedures such as cardiac catheterization with or without contrast studies. The latter part of each then considers specific malformations in detail.

Taussig's text is confined to congenital malformations and does not include acquired abnormalities; it is presented as two separate volumes. It is also the oldest and thus unavoidably lacks much recent information. Pediatric Cardiology bears strongly the imprint of Nadas' personality. This makes for pleasurable reading without detracting from its value. The appendices, including many normal values, tabular data as to incidence, and a table of drugs and dosages, are of particular value.

The texts written and/or edited by Keith, Vlad, and Rowe, and by Gasul, Arcilla, and Lev, are the most recent and informative. Each includes both congenital and acquired anomalies, are thus comprehensive and possess the advantage of being recent. The chapter on Rheumatic Fever written by Bessie Landrum in Gasul's book is superb, and the chapter on Complete Transposition of the Great Arteries in Keith is excellent.

1. Abbott, M. E.: *Atlas of Congenital Cardiac Disease*. New York: The American Heart Association. 1936.

2. Taussig, H. B.: *Congenital Malformations of the Heart*. New York: Commonwealth Fund. 1st edition, 1947, 2nd edition, 1960.

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□



## *Renal Role in Fluid Retention of Heart Failure*

ROBERT D. LINDEMAN, M.D.

MUCH EFFORT has been spent in trying to understand why the patient with congestive heart failure (CHF) retains excessive fluid, or more specifically, salt with its osmotically-obligated water. The exact renal mechanisms underlying inappropriate salt retention remain obscure probably because multiple responsible factors exist, with the relative importance of each factor varying among individuals. To understand the pathophysiology of salt retention in CHF, it is essential first to understand the normal physiologic mechanisms involved in control of urinary sodium excretion and how these mechanisms vary with changes in the physiological environment of the individual.

There is a tremendous range of sodium intakes which a normal person can tolerate and adjust to. When salt intake is restricted to 200 mg. per day, body weight falls slightly and urinary sodium concentrations may fall as low as two mEq/L. On the other hand, when salt intake exceeds 20 gm. per day, body weight increases slightly without visible edema and stabilizes at a new level with urinary salt excretion matching salt intake. Under both conditions, plasma sodium concentrations remain around 140 mEq/L.

Large amounts of sodium are filtered at the glomerular level and normally over 99 per cent of this filtered load is reabsorbed as it passes through the tubules. The rate of sodium excretion then is determined by the balance between these two processes, glomerular filtration and tubular reabsorption. Since plasma sodium concentrations

generally are maintained within a normal range, most changes in filtered load are due to changes in glomerular filtration rates (GFR). Acute studies defining the relationship between changes in GFR and urinary sodium excretion are well illustrated by Thompson and Pitts.<sup>1</sup> These workers placed a balloon catheter in the aorta so that inflation reduced both renal arterial pressure and GFR. A reduction of GFR to 60 to 75 per cent of control values produced 50 per cent or greater reductions in sodium excretion; a reduction of GFR to less than 60 per cent of control produced much greater reductions in sodium excretions, often approaching zero levels.

Between 70 per cent and 85 per cent of the filtered sodium is actively reabsorbed in the proximal tubule against electrochemical and osmotic gradients; this is accompanied by an equivalent amount of anion. Reabsorption of sodium continues in the distal nephron against much larger electrochemical and osmotic gradients and a part of the sodium removal is accomplished by a process of cation exchange whereby sodium is exchanged for either potassium or hydrogen.

The study of the factors controlling sodium reabsorption in the tubular system has been one of the most active areas of current research in renal physiology. Only the effects of aldosterone and related mineralocorticoids such as DOCA are well documented. These hormones stimulate the reabsorption of sodium in exchange for potassium and hydrogen in the distal tubule. Although there is general agreement that volume depletion stimulates aldosterone secretion and volume expansion shuts it off, the site or sites of the receptors responsible for mediating these effects remain in dis-

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pute. Early investigators maintained that pressor or volume receptors in the thyrocarotid arterial junction or right atrium controlled aldosterone secretion. More impressive recent studies indicate that the main stimulus for aldosterone secretion is an increased release of renin from the juxtaglomerular apparatus leading to angiotensin formation. Such studies as those showing that acute hemorrhage produces an acute increase in aldosterone levels in normal but not in nephrectomized dogs provides strong evidence for this thesis. Whether the primary receptor sites controlling renin release are in the juxtaglomerular cells of the afferent arteriole (stimulated by changes in pressure) or in the adjacent macula densa in the distal tubule (stimulated by changes in sodium concentration or load) also remains unsettled.<sup>2</sup>

Recently, investigators from England, Boston, and Dallas<sup>3, 4, 5</sup> have shown that additional factors controlling tubular reabsorption of sodium must exist. Acute expansion of extracellular fluid volume (ECFV) with isotonic saline produces great increases in urinary sodium excretion which might be attributed to small, subtle increases in GFR or to suppressed aldosterone secretion. These investigators either adrenalectomized or loaded their animals with exogenous mineralocorticoids so that changes in endogenous levels were insignificant and a ligature was placed around the renal artery so blood flow and GFR could be decreased measurably. Infusions of isotonic saline sufficient to expand ECFV resulted in striking increases in urinary sodium in the face of decreased filtered load and elimination of aldosterone effect. The increase in urinary sodium under these conditions has been attributed to "third" factor which in reality may be a number of unrecognized factors. Cross circulation studies<sup>6</sup> indicate this is a humoral substance and micropuncture studies<sup>7</sup> show this factor works in the proximal tubule.

It has long been recognized that GFR is decreased in moderate to severe congestive failure and at one time it was thought primarily responsible for the sodium retention seen in this disorder.<sup>8</sup> Cardiac output gen-

erally is decreased. Renal blood flow (RBF) is decreased more than either GFR or cardiac output. In the normal person, the kidneys receive at least 20 per cent of the cardiac output, but the patient with CHF may circulate only ten per cent of the cardiac output through his kidneys. Presumably blood is shunted to areas of more urgent need, such as the brain, either by relative renal vasoconstriction or relative vasodilation in other parts of the body.

Not only is total RBF decreased but also blood flow distribution may change in the kidney in CHF. With CHF and salt retention, blood flow is largely limited to the inner cortical and outer medullary glomeruli.<sup>9</sup> When blood flow is re-established in the outer cortical region with adrenergic blocking agents, a natriuresis develops. These findings, supplemented by anatomical confirmation, suggest that several nephron populations with different sodium-reabsorbing characteristics exist; the outer, shorter nephrons which are relative salt-losers and the inner nephrons with longer loops of Henle reaching down into the medulla which are relative salt and water retainers.

Subsequent studies<sup>10</sup> indicate that a decreased GFR secondary to decreased RBF is neither sufficient nor necessary for chronic sodium retention and show that enhanced tubular reabsorptive activity is the basic chronic renal alteration in patients with CHF. Great interest in the possible role of aldosterone as the mediator of salt and water retention in patients with CHF was stimulated in the late 1950's when many investigators reported that aldosterone secretion in these patients was usually elevated. Renal vein renin levels also are elevated in these patients. The failure of patients with aldosterone secreting adenomas or of normal persons during chronic administration of exogenous aldosterone to develop significant salt and water retention suggests that the aldosterone is merely an associated change accompanying edema or at most a contributing factor rather than the cause of the edema. It seems likely that the hemodynamic changes in the kidney with CHF, *i.e.*, decreased perfusion pressure, are similar to those seen in acute hemorrhage where teleologically stimulation of salt and water retention via the renin-angiotensin-aldosterone



system is crucially important. The same stimulus mediated in the patient with CHF becomes detrimental.

Patients with CHF usually, but not uniformly, have expanded blood volumes.<sup>11</sup> Again, however, volume or pressure receptors may mediate the message that blood volumes or pressures are insufficient and unrecognized mechanisms such as so-called third factor may stimulate salt and water retention. Until these factors are identified and their regulatory mechanisms characterized, it is unlikely that we will have a clear understanding of why a person with heart failure develops salt and water retention.

Finally, it should be mentioned that some individuals with severe failure develop low serum sodium levels or a dilutional hyponatremia. This is due to retention of water in excess of salt even though total body salt may be strikingly increased. The retention of water appears to result primarily from "inappropriate" secretion of antidiuretic hormone. Although total body water is excessive, volume or pressor receptors such as those identified in the left atrium and arterial system appear to mediate a message to the hypothalamus and posterior pituitary

that blood volume is insufficient. This would be identical to the stimulus seen in acute hemorrhage where teleologically it is important for the body to conserve all the water it can. The patient with CHF finds this water retention inappropriate and detrimental. □

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## SHARE YOUR MEDICAL JOURNALS WITH COLLEAGUES OVERSEAS

The doctors of the U.S.A. are being asked to send their medical journals—after they have read them—to colleagues overseas (Asia, Latin America, and Africa) who wish to have access to current medical literature but, either because of currency regulations or actual cost involved, cannot themselves subscribe to medical periodicals. We can supply you with the name, address, and medical specialty of doctors in these areas who would be happy to receive these much wanted journals, (*particularly specialty journals*), which you will mail direct to your overseas colleague.

This is a direct "Doctor-to-Doctor" program which is being sponsored by the American Medical Association with the collaboration of The World Medical Association to help alleviate the lack of current medical publications and to further international good will. Your cooperation in this program will be greatly appreciated and your contact with these colleagues in other countries, we can assure you, will prove very gratifying. If you wish to participate in this program, send your name, address, and titles of journals you will contribute to DOCTOR-TO-DOCTOR PROGRAM, ADA CHREE REID, M.D., Director, c/o The World Medical Association, Inc., 10 Columbus Circle, New York, New York 10019.



## OSMA Annual Meeting Offers "Everything Under the Sun"

The OSMA's 1968 Annual Meeting literally offers Oklahoma physicians "Everything Under the Sun." It's a diversified meeting featuring a healthy blend of educational, social, sports and business activities which has been carefully planned by 12 special interest medical societies in cooperation with the OSMA officers and committees.

The meeting will be held in Oklahoma City's newly refurbished Skirvin Hotel and Convention Center on May 16th through May 18th. Eighteen out-of-state lecturers and 47 Oklahomans will present a program of interest to all Oklahoma physicians.

Social events are planned for each night of the annual meeting. The Champagne Hour will be held Thursday night, May 16th, the Gaslight Party will be held Friday night, May 17th, and the President's Inaugural Dinner-Dance will be held Saturday evening, May 18th. Free picnic-style luncheons will add to the informal atmosphere of the meeting each day. The luncheons will be attended by physicians and exhibitors.

Twelve specialty societies are co-sponsoring scientific section meetings in their respective fields of interest. Practical programs designed for their broad appeal to most practitioners are offered in the areas of pathology, eye, ear, nose and throat, general practice, psychiatry, general surgery, internal medicine, pediatrics, radiology, dermatology, obstetrics and gynecology, orthopedic surgery and cardiovascular disease.

OSMA's Board of Trustees will meet for its annual session at 1:30 p.m., May 16th. The OSMA House of Delegates will be in session from 8:30 a.m. until noon on May 17th and 18th. Reference Committees of

the house will convene at 4:00 p.m., May 17th.

The "Forum on Government" is scheduled for Saturday afternoon and is a teaching program on the basic instrumentalities of state government. It will feature a comparative analysis of the jurisdictions and operations of the executive, judicial, and legislative branches. Featured speakers include Governor Dewey Bartlett, Attorney General G. T. Blankenship, Senate President Pro Tempore Clem McSpadden, House of Representatives Speaker Rex Privett, Legislative Council Director Jack Rhodes, Supreme Court Vice-Chief Justice Pat Irwin, and State Finance Director Carl G. Williams.

Other features of the meeting include the annual Golf Tournament on Friday, May 17th, 68 technical and 16 scientific and institutional exhibits, specialty society meetings and dinner functions, the OSMA Woman's Auxiliary meeting, and the annual meeting of the Oklahoma Medical Political Action Committee.

The "Champagne Hour" will be held Thursday evening at 6:30 p.m. in the Persian Room of the Skirvin Tower. Fountains of domestic champagnes complimented by an artful array of hot and cold hors d'oeuvres are all free. All physicians and their wives are invited to this delightful affair.

Chicago's famous Gaslight Club presents its road show during the gala Gaslight Party Friday evening. The show will feature five great jazz musicians and four gorgeous gaslight girls. The highlight of the evening will be when the gaslight girls teach some lucky physician the dances of the roaring '20s. Draught beer, set-ups and party favors are included in the ticket price of \$7.50 each. During the evening two \$100 lifetime Gaslight Club memberships

will be presented as door prizes. The party starts at 8:00 p.m. and lasts 'til midnight.

The social highlight of the OSMA year will be the President's Inaugural Dinner-Dance on Saturday night, 7:30 p.m. The dinner-dance will be preceded by an hour-long poolside cocktail party and the dinner itself will be a gourmet banquet. This will be followed by dancing to the music of the popular Al Good Orchestra. Tickets are \$10 each.

### Calendar of Events

#### Thursday, May 16th:

- 1:30 p.m. OSMA Board of Trustees
- 1:30 p.m. Section on Pathology
- 4:00 p.m. OSMA Woman's Auxiliary Board Meeting
- 6:30 p.m. Champagne Hour

#### Friday, May 17th:

- 8:30 a.m. OSMA House of Delegates
- 8:30 a.m. Section on Eye, Ear, Nose and Throat
- 8:30 a.m. Section on General Practice
- 8:30 a.m. Section on Psychiatry
- 9:00 a.m. OSMA Golf Tournament
- 9:30 a.m. Woman's Auxiliary General Session
- 12 noon Free Picnic Luncheon
- 12 noon Woman's Auxiliary Style Show—Luncheon
- 1:30 p.m. Section on General Surgery
- 1:30 p.m. Section on Internal Medicine
- 1:30 p.m. Section on Pediatrics
- 1:30 p.m. Section on Radiology
- 8:00 p.m. Gala Gaslight Party

#### Saturday, May 18th:

- 8:30 a.m. OSMA House of Delegates
- 8:30 a.m. Section on Dermatology
- 8:30 a.m. Section on Obstetrics and Gynecology
- 8:30 a.m. Section on Orthopedic Surgery
- 8:30 a.m. Section on Cardiovascular Disease
- 9:30 a.m. Woman's Auxiliary General Session
- 12 noon Free Picnic Luncheon
- 12 noon Woman's Auxiliary Post-Convention Board Luncheon
- 1:30 p.m. Forum on Medicine and Government
- 6:30 p.m. Poolside Cocktail Party
- 7:30 p.m. President's Inaugural Dinner-Dance



## Blue Shield Proposes Customary Fee Payment

Oklahoma Blue Shield, responding to an OSMA House of Delegates action, is developing a program to change from an indemnity system for the compensation of physicians to a program involving the payment of usual, customary and reasonable fees.

OSMA's House of Delegates voted in 1967 to approve the U-C-R concept for the Blue Shield plan, and also endorsed in general a Blue Shield plan to provide more comprehensive benefits to insureds.

The proposed administrative technique to implement the U-C-R program was accepted on March 3rd by the association's Prepaid Medical Care Committee, and will be passed along for the House of Delegates' consideration during the 1968 annual meeting. Meanwhile, the plan is being circulated to all state physicians by mail.

If approved by the OSMA, the payment system will become effective as soon as the entire Blue Shield package—expanded benefits and new pay scale—is ready for marketing.

Following is the administrative technique proposed by Blue Shield, after sixteen conferences with physician groups, to implement U-C-R.

### Proposed Usual, Customary and Reasonable Program

**I. Purpose:** The purpose of the Usual, Customary and Reasonable Program is to provide a mechanism whereby Blue Shield could pay the reasonable charge of the physician for a covered service while still demonstrating to the public a reasonable safeguard against unlimited liability.

**II. Criteria for Determining Acceptability of Charges:**

**A. Usual Charge** refers to the amount which the individual physician usually and most frequently charges all his patients for a specific professional service.

**B. Customary** relates to the range of usual charges made by physicians

of similar ability and experience for the same service within the specific socio-economic area.

**C. Reasonable Charge** is that charge which meets both the Usual and Customary criteria as defined above, or is justified due to complexity of treatment which merits special consideration.

### III. Method of Determination:

**A. Usual Fees:** A profile of charges would be developed for each individual doctor, the profile being based on historical data of the charges of the doctor or a survey of his charges—or a combination of both.

**B. Customary Fees:** A range of fees is compiled for each of the services performed and reported by the individual doctors within a given area which will assure the optimum level of paid-in-full benefits. This range will be established to accommodate a minimum of 90 per cent of the services in a given socio-economic area.

1. The delineation of a given area for establishing customary payment levels is based on such factors as: demographic characteristics of the population, general economic characteristics, unique patterns of medical practice, logistical patterns of medical care and natural geographic boundaries.

2. The above data will be reviewed and the customary range will be adjusted when as many as 50 per cent of physicians who perform a given service in a socio-economic area request a new "usual" fee.

### IV. Payments to Physicians and Members:

**A.** Payment will be made directly to physicians for services provided under the program.

**B.** There will be some cases where a question will arise concerning the amount of a benefit which is payable because the physician's charge exceeds either his usual fee or the customary range of fees. Where this occurs, Blue Shield will take the following steps:

1. The claim will be reviewed with Blue Shield's medical advisor and/or Medical Advisory Committee to determine if unusual clinical circumstances or medical complications were involved. If the advisor or committee feels the documentation of the case is sufficient to warrant payment in full, the charge will be paid.

2. If additional facts are needed, information may be obtained from the doctor himself or the hospital chart. If satisfactory documentation to warrant payment in full is obtained through these channels, the charge will be paid.

3. If Blue Shield still has some question about the services and fee, and no agreement is reached between Blue Shield and the physician with respect to such matter, Blue Shield shall refer the matter to the appropriate Medical Insurance Review Committee established by OSMA in the prescribed manner.

4. In the event the matter is still not resolved through the total OSMA Medical Insurance Review function, payment shall be made directly to the member. Payment will be based on the physician's previously accepted usual charge or the average charge in the physician's socio-economic area, whichever is the greater.

5. Blue Shield, in the absence of a prior agreement between the physician and the member, will take every reasonable action to resolve the matter without residual payment by the member. Such action may include assistance with respect to the defense of a legal proceeding if Blue Shield, in light of all the circumstances, believes the physician's charges exceed the reasonable worth of the services.

**V. Procedure to Change Fees:** A physician may change his recorded usual charges by filing a written 90-day notice of his intention with Blue Shield, giving the reason for the increase.

When a physician files for an increase in more than one fee, consideration may be given to establishing guidelines based on changes



in the Consumer Price Index, date and amount of last fee increase, etc.

In the event his new charge exceeds the upper limit of the Customary Range of Fees in his area, he will be so informed by the Plan and there are the following alternatives:

A. He may resubmit; or

B. He will be requested to continue accepting his old fee until such time as his requested fee falls within the Customary Range of his area. The physician will be so notified by Blue Shield when this occurs. (In the event the physician refuses both alternatives, he will be notified that all Blue Shield payments will be made to the member, based on the physician's previously accepted usual charge or the average charge in the physician's socio-economic area, whichever is the greater.)

VI. *Liaison with Physicians:* Blue Shield assumes the responsibility to maintain active liaison with medical review committees and other appropriate organizations of physicians such as County or State Professional Societies for the following purposes:

A. To review specific cases where there is some question regarding the reasonableness of the fee, provided that prior review of the claim by Blue Shield and contact with the physician have not resulted in agreement as to the charge.

B. To provide Blue Shield with current information on changing methods of practice, especially with respect to charges for new procedures resulting from the development of new medical techniques and other advances in medical science.

C. To assist in the handling of problems of mutual interest to physicians and Blue Shield.

D. To assist in the evaluation of any studies made by Blue Shield or Professional Society, and to coordinate Blue Shield actions to maintain a high quality of medical care at a reasonable cost. □

## Whelan Memorial Fund Continues To Grow

College educations for the three children of Dwight F. Whelan are almost assured according to Raymond F. Hain, M.D., Trustee, "As of March 12th we have received contributions amounting to \$9,000.00. Our goal is a minimum of \$10,000," Hain said.

The memorial trust fund was established after Whelan's untimely death in an automobile accident the morning of February 13th. The trust was drawn up by Stuart Strasner of the First National Bank Trust Department. Doctor Raymond F. Hain, OSMA Executive Secretary Don Blair, and Edmond attorney C. H. Spearman, a member of the Oklahoma House of Representatives, were named trustees for the fund.

Contributions to the fund have been solicited from all members of the OSMA. The purpose of the fund is to assure that Steven, Terri and Sharon Whelan will receive a college education. Since the oldest child is only 11 years of age, the fund will

have several years to compound interest before the first payout is made.

Any Oklahoma physician wishing to contribute to the fund should make his check payable to the Dwight F. Whelan Memorial Fund and send it to the OSMA Executive Office, P.O. Box 18696, Oklahoma City, Oklahoma 73118.

Whelan worked for the OSMA for six years in the position of Associate Executive Secretary and handled most of the association's legislative program. During that same time he was active in civic and community affairs in Edmond and was named one of Oklahoma's outstanding young men.

Maxwell A. Johnson, M.D., OSMA President, said, "In Dwight's six years with the association he gave our legislative program an incalculable boost. We do not intend to forget his contributions and I am personally asking all Oklahoma physicians to contribute to the fund." □

## Malcom Phelps Named To Washington Post



Congratulations for Doctor Malcom E. Phelps came from Senator A. S. Mike Monroney in Washington after the El Reno physician was sworn in as director of the Vietnam Health Program of the Agency for International Development. Doctor Phelps has been on two previous six-months tours in Vietnam to aid civilian medical and health programs. □



## Legislative Digest

The OSMA Legislative Committee has 42 bills under observation in the second session of the Thirty-First Oklahoma Legislature. The purpose of this digest is to concentrate on the most important bills of general interest to all Oklahoma physicians.

### Bills in Senate

The following bills are on General Order in the Oklahoma State Senate and should be voted on sometime during the month of March.

S.J.R. 52: This is a proposed constitutional amendment which will provide for a capital improvement bond issue of \$99½ million. The Medical Center of the University of Oklahoma would receive \$26½ million for improvement and expansion and other state agencies would receive varying amounts. *This bill is endorsed by the OSMA Board of Trustees.*

S.B. 664: Relating to civil procedure and providing that a party to a lawsuit shall be required to submit to only one physical examination and providing that such examination shall be given in the presence of an attorney or other person designated by the party being examined. *The OSMA has no current position on this bill, however, a similar bill was opposed in a past legislative session.*

S.B. 708: Providing at least one member of the State Board of Health shall be a registered pharmacist and that a registered pharmacist may be a member of the county board of health. This bill will not affect the number of physicians on the State Board of Health and *the OSMA has taken no position on it.*

S.B. 712: Providing immunity from liability for good faith decisions and actions of members of hospital utilization review committees. *This bill was initiated and is endorsed by the OSMA.* It was necessitated by the Medicare laws that require a hospital utilization review committee but gives such a committee no legal protection for any actions it might take.

H.B. 710: This is the abortion bill that was introduced into and passed the House of Representatives during

the first session of the Thirty-First Legislature. It provides for legal therapeutic abortions in certain instances. During this session the Senate Judiciary Committee adopted amendments to this bill which were recommended by the OSMA and the Oklahoma Legislative Council. These amendments provide for a committee on therapeutic abortions to be established in all accredited hospitals, such committee to pass on the advisability of an abortion. *The OSMA has taken no position either favoring or opposing this bill.* However, it is seeking the strongest bill possible in order to protect Oklahoma physicians.

H.B. 985: Empowering the medical examiners, certain deputies, and district attorneys to require and authorize postmortem examinations (autopsies). It also provides that any guardian of the person or next of kin of the deceased may, by application to the district court of the district in which the deceased resided, require the examiner involved to show cause for such examination. Such examination shall not be performed before a hearing thereon. *This bill is endorsed by the OSMA.*

### Bills in Senate Committees

S.B. 726: Authorizing the State Board of Medical Examiners to register certain foreign trained doctors without examination for limited practice in state operated hospitals and infirmaries. This bill amends the prior foreign physician act to provide that they may work in all state owned and operated hospitals or infirmaries. The bill is currently pending before the Senate Health, Welfare and Veterans Affairs Committee. *The OSMA has taken no position.*

S.B. 95: Providing a procedure by which a claimant may ascertain the existence and amount of the defendants' liability insurance. This bill is currently in the Senate Judiciary Committee and *is opposed by the OSMA.*

### Bills in House

The following bills are on General Order in the Oklahoma House of Rep-

resentatives and should come up for consideration during March.

S.B. 416: This bill amends the Workmen's Compensation Law and clarifies the liability of payment for medical attention in case of deceased employees. In some instances in the past, it was necessary for the physician to seek payment from the deceased estate for medical attention rendered prior to death. This bill will provide that the employer will be liable for such medical charges. *This legislation is endorsed by the OSMA.*

### Bills in House Committees

S.B. 346: Authorizing the State Board of Health with the advice of the State Hospital Advisory Council and the State Board of Pharmacy to adopt rules, regulations and standards for the storage and dispensing of medicine in hospitals. The Board of Pharmacy is empowered to inspect such drug room facilities and shall report violations of statutes and regulations to the State Board of Health for action. This bill is designed to correct an inconsistency in the law which has the effect of calling for a double licensure of hospital drug rooms. *This particular bill was endorsed and approved by the OSMA House of Delegates during its 1967 meeting.* It is currently in the House Committee on Social Welfare and Public Health. □

## DRUGS . . .

Continued from page 96

volves the use of professional judgment. Any artificial barriers which interfere with the exercise of this judgment are unwise and dangerous. The physicians should be free to prescribe the products which they deem best for their patients. Any changes in the medication should only come after proper consultation between physician and pharmacist and only with the consent of the physician. Those who seek other approaches should make certain that they are fully aware of the consequences which may result and determine whether the risks involved are truly worth the savings. □



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## Life Insurance Benefit Tops \$800,000

Since 1956 the association has offered to all members a Group Term Life Insurance Program underwritten by the Massachusetts Mutual Life Insurance Company. A total of over \$800,000 has been paid in benefits to 49 deceased physicians' families. The premiums collected to finance this program have not been sufficient to offset death claims and as a result, the Council on Insurance has announced an annual \$25.00 increase.

The Council studied other association plans and concluded that the OSMA plan offers superior benefits for the cost involved. Each OSMA member pays \$150.00 for his life insurance which provides Term Insurance, Waiver of Premium, Dismemberment and Loss of Sight coverage. The association group life insurance is the only group offering Double Indemnity coverage. In addition, the basic coverage and Accidental Death benefits are in force while piloting an airplane.

In excess of 350 members are currently insured. Like other OSMA plans, the life insurance program was selected through competitive bidding.

The plan has several benefits that are unique to "group" policies.

These benefits include:

1. Continuous of life insurance without payments in the event of total or permanent disability before age 60.

2. The settlement option of physicians choice: Lump sum payment, monthly payments for specified period of time, or, under certain circumstances, a combination of both.

3. Double indemnity for accidental death, equal to the amount of the life insurance, is payable in addition to the life insurance for death by accidental means.

4. Triple the amount of the life insurance will be paid in the event of death as a result of accident while traveling as a fare-paying passenger operated by a common carrier.

5. The policy amount may be converted from term life to standard life any time the policyholder so desires. This allows a physician that plans on leaving the state of Oklahoma and subsequently membership in the OSMA to retain excellent insurance coverage.

6. An amount equal to the life insurance is payable in the event of the accidental loss of both hands, both feet, or the loss of sight of both eyes. Full amount of the accidental death and dismemberment benefit is also payable for the loss of any two members.

The OSMA Group Life Insurance Program is fully underwritten by the Massachusetts Mutual Life Insurance Company, Springfield, Massachusetts.

According to Mr. Walter C. Wilson, OSMA Insurance Consultant, this program offers more and better benefits than any other group program available to Oklahoma physicians.

Any member of the OSMA interested in this program should contact the OSMA Executive Office, P.O. Box 18696, Oklahoma City, Oklahoma 73118. □

## Nurses-Physicians Confer On Patient Care

"Nurse - Physician Collaboration Toward Improved Patient Care" was the theme of a conference sponsored by the OSMA and the Oklahoma State Nurses Association. The conference was held February 15th-17th at Fountainhead Lodge on Lake Eu-  
faula.

Over 100 physicians, nurses and guests attended the three-day meeting. During that time they heard talks by several experts in the field of nurse-physician communication.

The program was kicked off Thursday evening, February 15th, with a talk by Mrs. Walter Bowman of Woodward, Oklahoma, speaking on the subject "The Sick Person's Needs—As Viewed by a Patient." Mrs. Bowman's comments later encouraged James W. Walker, M.D., of the Florida Medical Association to refer to her as the "female Will Rogers."

The three-day meeting was summed up by James W. Walker, M.D., of the Florida Medical Association, and Mrs. D. Ann Sparmacher, R.N., of the AMA Committee on Nursing.

In her closing summary, Mrs. Sparmacher stated that the attendance at the Oklahoma meeting was "absolutely fantastic." She went on to say that the AMA had sponsored a national meeting on the same subject and had only four more participants than were present for the Oklahoma meeting. She said, "I think you should all have gold medals for the type of conference that you have put on. It really would challenge any national conference. You have moved ahead with ease and the production of this meeting is simply fantastic."

Doctor Walker stated, "multilog, as a very wise and capable behavioral scientist described it, is the give and take exchange of ideas colleagues in a cordial atmosphere. That is what we have experienced here."

The summations were preceded by reports from ten discussion group recorders. Each group consisted of approximately five nurses and five physicians and met for several hours to consider mutual problems. The results of these group discussions will be published as soon as they are completed. □

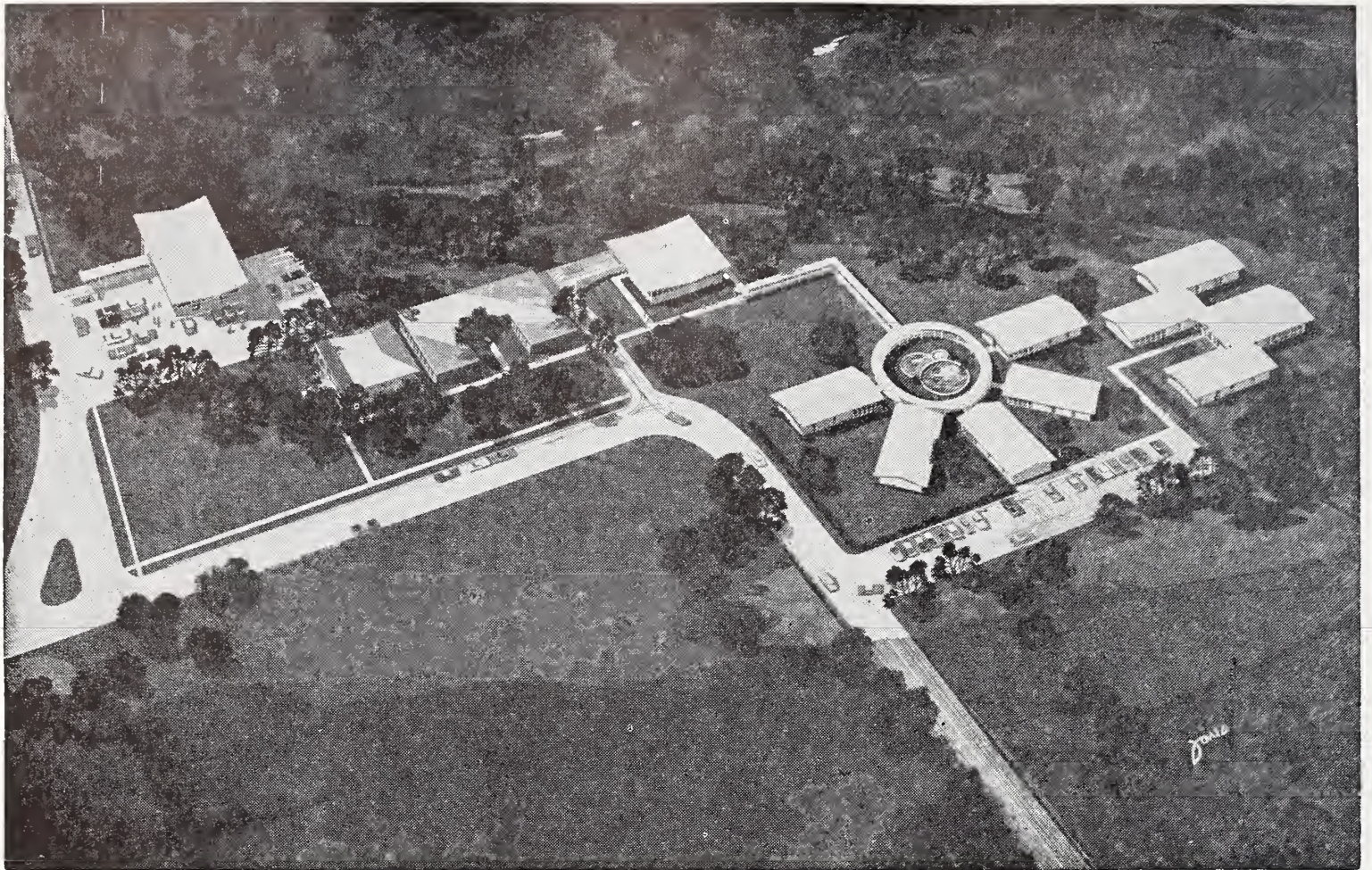
## AMA Reappoints Dean Dennis To Council

James L. Dennis, M.D., Dean and Vice-President of the University of Oklahoma Medical Center, has been reappointed a member of the Council on Scientific Assembly of the American Medical Association.

Doctor Dennis' reappointment was announced by Wesley W. Hall, M.D., chairman of the AMA's Board of Trustees.

The AMA Council is responsible for scientific programs and exhibits at the annual and clinical conventions of the AMA. The annual convention program is divided among 23 different sections, each representing a medical specialty. □





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## Medical Assistants Offer Adult-Lecture Series

Medical assistants in the Oklahoma County area will be interested in plans being finalized by the College of Continuing Education at the University of Oklahoma's Norman campus Health Studies Center for a six-weeks evening adult-lecture series. Mr. John Gilmore, Health's Studies' Extension Specialist, tentatively announces the opening session for the last week in March. The series will continue two nights a week (Tuesday and Thursday) through April, ending approximately on May 2nd, with class instruction from 7:00 to 9:30 p.m., and arrangements are being made to utilize the modern auditorium facilities of the Oklahoma Medical Research Foundation located in the Medical Center complex on Northeast 13th street in Oklahoma City. Instructors from the Medical Center faculty and the Norman campus will give detailed classroom lectures on subjects designed to enhance the physician's office assistant's basic medical background, including four hours on medical vocabulary, 14 hours on physiology, anatomy, and diseases of selected body systems; two hours on orientation to basic laboratory procedures, and two hours each on office accounting/bookkeeping basics, and medical ethics, law, and human relations. The semi-technical publication "Understanding Medical Terminology" (designed to augment teaching to paramedical groups) is included in the total registration fee of \$25, as a reference text, along with a supplementary publication *New* from the AMA on basic anatomy.

The schedule of dates, times, lecture subjects, and exact location of the classes is being mailed to all physicians' offices in Oklahoma City and surrounding counties, together with a letter from Mr. Gilmore giving details of registration procedures. Enrollment in the lecture series may be limited, but membership in the official medical assistants is not a prerequisite.

A similar series (from O.U.) is underway in the Tulsa area, being

held on six successive Saturday afternoons at the Hillcrest Medical Center, under the direction of Mrs. Hazel Wade, R.N., past-president of the Oklahoma State Medical Assistants and the Tulsa County chapter. □

## Five Attend AMPAC Workshop

The political action committee representatives from 50 states met in Washington, D.C., March 9th and 10th to discuss national political questions of importance to organized medicine.

The American Medical Political Action Committee sponsored the two-day workshop and a delegation of five physicians from the Oklahoma Medical Political Action Committee attended the meeting.

Several outstanding and nationally known political figures spoke dur-

ing the meeting. These included Senator Daniel K. Inouye of Hawaii, Senator George Murphy of California, Representative Melvin Laird of Wisconsin, political editor Neal Pierce of the *Congressional Quarterly* and columnist David Broder of the *Washington Post*.

The major aim of the workshop was to give local PAC organizations information on the best methods of forming candidate support committees. AMPAC Field Representatives reported on composition and organization of such committees, activities and techniques to be used, fund raising, opinion making, and what women can do to assist in the campaign.

Rex Kenyon, M.D., OMPAC chairman, stated, "To me the most important part of the meeting was the Saturday afternoon's problem-solving clinics. We discussed practical ways to make local candidate support committees successful." □

## DEATHS

WILLIS W. FORRY, M.D.

1905-1968

A Bixby, Oklahoma physician since 1936, Willis W. Forry, M.D., died there February 28th, 1968. A native of Muskogee, Oklahoma, Doctor Forry graduated from the University of Tennessee School of Medicine in 1935. Following his internship, he established his practice in Bixby.

WILLIAM C. GILLIAM, M.D.

1869-1968

William C. Gilliam, M.D., an Oklahoma physician since 1900, died February 2nd, 1968, in Spiro. Born in Greenwood, Arkansas, he had practiced in Spiro since 1918.

Doctor Gilliam was honored for over a half century of service to his profession when the OSMA presented him with a Life Membership in 1950.

PAUL B. CAMERON, M.D.

1907-1968

Paul B. Cameron, M.D., a Pryor physician since 1941, died January 10th, 1968. An internist, Doctor Cameron graduated from the University of Kansas School of Medicine in 1930. Before moving to Pryor, he had practiced in Tulsa.

He was certified by the American Board of Internal Medicine and a Fellow of the American College of Physicians.

PHILIP M. SCHRECK, M.D.

1912-1968

A 55-year-old Tulsa internist, Philip M. Schreck, M.D., died January 30th, in Tulsa. He graduated from Baylor University College of Medicine in 1936. Following his residency training, he established his practice in Tulsa.

Doctor Schreck was a member of the American College of Chest Physicians and a Fellow of the American Society of Internal Medicine. □



## San Francisco To Host AMA '68 Meeting

The 117th Annual Convention of the American Medical Association will be held in San Francisco, California, June 16th through 20th in Brooks Hall.

Four general scientific meetings on auto accidents, health care planning, infectious diseases and treatment of advanced malignant diseases are featured on the scientific portion of the convention. Twenty-three specialty section programs are also planned.

Physicians attending the meeting will view over 600 scientific and industrial exhibits, several medical motion pictures, and, in addition, the AMA TV network will present more than 40 hours of convention news.

Over 90 hotels and motels in the downtown San Francisco area have been reserved for physicians wishing to attend the convention. The AMA is suggesting that all physicians make their reservations as soon as possible.

With a background of Chinatown, the Golden Gate Bridge, Fisherman's Wharf and Telegraph Hill the '68 convention promises to be both exciting and colorful. □

## Clergy-Physician Conference Successful

Approximately 150 physicians and clergymen attended the special two-day meeting on religion and medicine held in the St. Francis Center for Christian Renewal, February 2nd and 3rd. The meeting discussed the theme "The Whole Man In a World of Changing Morals."

Keynote speakers for the meeting were Reverend Doctor Paul B. McCleave, of the AMA's Department of Medicine and Religion, and David Belgum, Ph.D., Associate Professor of the University of Iowa School of Religion and College of Medicine.

McCleave addressed the opening session of the meeting with a talk on "Modern Medicine and Its Paradox." Belgum spoke to the participants on two occasions. His first

talk, "Making the Whole Man Whole Again," was given Friday afternoon and he spoke again on Saturday morning on the subject "Dying With Dignity."

Edward K. Norfleet, M.D., Chairman of the OSMA Committee on Medicine and Religion, stated, "The most important part of the meeting was the panel discussions held on both days. Several outstanding Oklahoma physicians and clergymen participated to make the discussions both lively and interesting."

Physicians participating in the panel discussions included Charles E. Green, M.D., Lawton; Adolph N. Vammen, M.D., Tulsa; E. N. Lubin, M.D., Tulsa; and Chester Pierce, M.D., of the OU Medical Center.

The clergy was represented on the panels by the Reverend William Nervin, Pastor, Community of John the 23rd, Oklahoma City; the Reverend J. V. Porter, Chaplain, Baptist Hospital, Oklahoma City; Rabbi Joseph Levenson, Temple B'nai Israel, Oklahoma City; and the Reverend Herbert P. Fritze, Executive Chaplain, Oklahoma District, Lutheran Church-Missouri Synod. □

## Davis Reappointed To AMA Council

Kieffer Davis, M.D., Bartlesville, Oklahoma, has been reappointed a member of the Council on Occupational Health of the American Medical Association.

Doctor Davis' reappointment was announced by Wesley W. Hall, M.D., Chairman of the Board of Trustees.

The AMA Council produces and distributes more than 75 publications for physicians, nurses and others on such subjects as: Workmen's compensation; survey of hazards in the working environment; pre-placement and periodic physical examinations; rehabilitation; employment of the handicapped; industrial nursing; disability evaluation; absenteeism; radiation in industry; safety programs; small plant occupational health programs; industrial dermatoses; development of company medical policies; diagnosis of occupational illness. The council also conducts the annual congress on occupational health. □

## BOOK REVIEWS

### DEVELOPMENT OF THE LUNG.

Ciba Symposium. Edited by A. V. S. De Reuch, M.Sc., C.I.C., A.R.C.S., and Ruth Potter, M.R.C.P. 408 pp., Boston: Little, Brown and Company, 1967. \$13.00

This book provides extremely interesting data concerning comparative morphologic and physiologic observations on the development of lung in various species. It is highly specialized reading, and would be stimulating only for an interested clinician, researcher, or student engaged in various areas of pulmonary research.

There are several papers included under the phylogeny of the lung in which the discussants consider the evolution of animals from water to land and speculate on the possible sequence of respiratory adaptation. The human neonatal lung is considered in some depth with regard to

structure, post-natal growth, and its alveolar lining layer. Various physiologic aspects of intrauterine gas exchanges are discussed.

Many new observations are presented in various studies, however, in many instances these data are found in the informal discussion sessions following the presentations. Most of the informal discussions would be the most interesting reading for the non-specialist.—J. J. Coalson, Ph.D.

### ENDOCRINOLOGY OF THE TESTIS.

Ciba Foundation Colloquia on Endocrinology, Volume XVI. Edited by J. E. W. Wolstenholme and Maeve O'Connor. 331 pp., with 93 illustrations. Boston: Little, Brown and Company, 1967. \$12.50.

*Endocrinology of the Testis* is the sixteenth and final volume in a se-



ries of international colloquia on endocrinology. Hormonal function of the testis is considered by twenty-six investigators in the fields of anatomy, physiology, biochemistry, pathology, and clinical endocrinology. Recent research is presented in fifteen topics, each supplemented by group discussion among the participants in the colloquium.

Topics presented include histo-

chemistry and fine structure of the interstitial tissue in the human foetal testis; factors influencing the secretion of testosterone in the anaesthetized dog; testicular function in man; the role of the testis in oestrogen production; direct and indirect effects of oestrogens on the enzymes of the testis; and steroid biosynthesis in the abnormal testis. Attention is also directed to the clinical syn-

drome of mixed testicular dysgenesis.

Topics presented are generally concise; illustrations, photomicrographs, and charts are excellent. The book is recommended both for the clinician and basic scientist interested in recent advances in the field of testicular endocrinology.—  
*Donald B. Halverstadt, M.D.* □

## Miscellaneous Advertisements

**PHYSICIAN WANTED** to work full-time in university health work at Oklahoma State University, Stillwater. Excellent working conditions, regular hours, and many extra benefits. Contact Donald L. Cooper, M.D., Director, Student Health Service, Oklahoma State University, Stillwater, Oklahoma.

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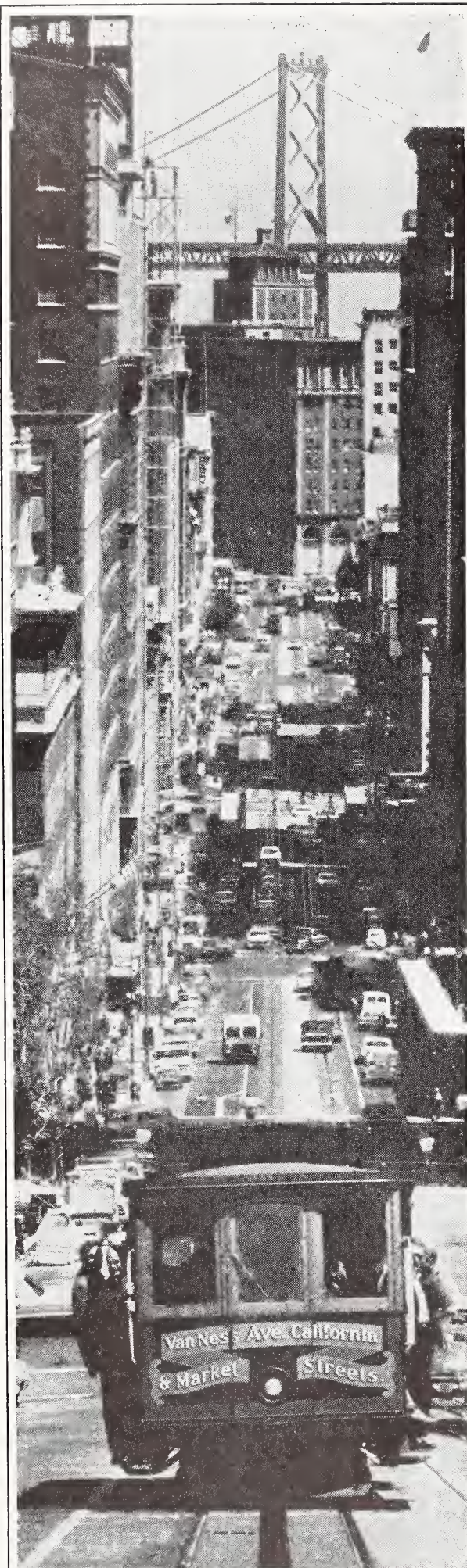
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Hairy sites  
where cream  
and ointment  
do not spread  
or penetrate  
readily.

Exposed areas  
where cosmetic  
considerations are  
important.



## *A Time To Speak Out*

THE PRACTICE of medicine has always been closely allied with the needs of the society it serves. No disciple of Aesculapius is free to follow his own inductive path in prescribing for a patient without considering the social condition and the general thought of the times. We are now facing a social problem of considerable medical moment.

Our legislature is now considering a change in the current abortion laws—a change which would affect the practice of medicine for many of us. The present law allows a therapeutic abortion to be carried out only to “preserve the life” of the mother. Many changes have taken place in the field of medicine since this law was enacted. (Many changes have occurred in our social environment, also.) It is now uncommon to encounter a pregnant patient with heart disease, tuberculosis or diabetes of such gravity that a therapeutic abortion is required to save her life. Yet, our current laws were designed to protect the lives of women suffering from such grave illnesses. Advances in medical knowledge and management of these diseases has made abortion largely unnecessary for the patient with a serious illness complicated by pregnancy.

The change in the law that is presently being considered by the legislature in Oklahoma would provide that therapeutic abortion be permitted when continuation of the pregnancy would result in serious risk either to the physical or mental health of the woman, when there is significant risk of fetal deformity, and in women in which pregnancy results from rape, incest, or if the patient is judged mentally incompetent or is found to be pregnant under the age of 15. One of the leading indications for therapeutic abortion in our country at present is for psychiatric problems, usually entailing the threat of suicide. It has been clearly shown that the incidence of suicide during pregnancy is less than in non-pregnant women of the same age group. The threat of suicide, however, provides a physician with the pretext that the abortion is being done to “save the life” of the mother! Maternal

From the Department of Gynecology and Obstetrics, University of Oklahoma School of Medicine, Oklahoma City, Oklahoma.

rubella during the early weeks of pregnancy with its accompanying risk of producing fetal malformations is another indication for therapeutic abortion, an indication acceptable medically but not legally in Oklahoma. Recently, an 11-year-old girl, presumably pregnant as the result of statutory rape, was ordered to be aborted by the Juvenile Court, following medical testimony that pregnancy represented a threat to her physical and mental health. Clearly, the judiciary recognized that the present law is inadequate and found it necessary to rule in direct opposition to the existing law. Obviously the change in law currently being considered would not represent a true liberalization of the indications for abortion but would offer legal protection to physicians performing therapeutic abortion for indications currently thought to represent good medical practice.

There are those who are opposed to therapeutic abortion under any circumstances on moral or religious grounds. Their views should also be openly aired and any physician who is so opposed should not be held liable under the law for failing to recommend an abortion. Opposition on religious grounds would be easy to prove, opposition on moral grounds would be relatively difficult. The personal moral philosophy of the individual physician should be given every consideration. Legal protection for physicians, so opposed, should be specifically written into any change in law. Now is the obvious time for this to be done.

On the other side of the fence stands a group who favor “free abortion,” or abortion for social reasons. If it be true that the woman most likely to be seeking the services of a “criminal abortionist” be in her 30’s, married, the mother of several children and pregnant by her husband, then it becomes obvious that the present change in law being considered will offer little to this group. The proponents of abortion on demand should also make themselves heard. There



are several countries in our world today in which this philosophy predominates.

Regardless of our personal philosophies concerning therapeutic abortion, we should all ask ourselves if we are doing everything possible to avert the need for this unfortunate situation. Are we doing all we can to assist our educators in promoting a more mature, responsible attitude between the sexes in our school systems? We should ask ourselves if we are participating actively in promoting contraceptive programs, in providing family planning advice and materials to all in need. The institution of these two programs should make any law concerning therapeutic abortion of ever decreasing consequence.

The present law forces us to practice modern medicine in open defiance of the law and promotes a hypocrisy resulting from this inequity between modern medicine and outdated law. It behooves us all to act as individuals through our medical organizations to come forth with our views. We must present our legislators with the best of current medical information on *all* sides of this question. If we disregard our opportunity to speak out on this issue of such great social consequence we will have no alternative but to accept the dictates of a well meaning legislative body.—*Robert N. Smith, M.D.*

## Teenage Pregnancies

ONE OF EVERY four babies in Oklahoma is born to a mother under 20 years of age. Almost 100 babies are born each year to mothers 14 or under. It is estimated that one of every eight girls is pregnant before or soon after leaving high school. Forty-four per cent of out-of-wedlock births in the United States in 1965 were to mothers 13 to 19 years old.<sup>1</sup>

The divorce rate of teenage marriages is three times that of those married between 21 to 25.<sup>2</sup>

Youthful pregnancies carry much higher risk than those among women in their twenties. Complications of toxemia, prematurity, and fetal and neonatal mortality run two to three times that among women 20 to 30 years old. Many more of the infants

born of these teenage mothers have neurological damage—mental retardation, learning disorders, perception disorders, hyperactivity, and other defects.

The psychological aspects of youthful pregnancy are also important. It has been said that there are three great maturational crises in a woman's life. These are puberty, pregnancy, and the menopause. Maurine LaBarre, Assistant Professor of Psychiatric Social Work, Duke University Medical Center, says that "all three are characterized by profound physiologic and psychologic changes, and each creates characteristic adjustment tasks for women. The early phase of marriage is also a critical phase in feminine life. Thus, girls who marry and become pregnant in their teens may experience concurrently three major life crises: They have not yet completed adolescent development and are struggling with adjustments to marriage while they are experiencing the crisis of their first pregnancies."<sup>3</sup>

"In these girls, the stresses of pregnancy are added to the nutritional needs for body maturation and are often superimposed on a previously existing poor nutritional status."<sup>4</sup>

These are problems which confront our society today. From the teenage girl, we get more brain-damaged infants and children. The impact of the psychologic crises in these young people is difficult to determine. The divorce rate is higher. Teenagers give birth to nearly half of the illegitimate infants. These are challenges to the various groups in our society—medicine, education, public health, social agencies, and parents' groups.

Can schools design education courses to help students become (1) more willing to face problems of sex, courtship, and marriage; (2) more likely to break off going steady until marriage can realistically be considered; and (3) more able to assume roles and responsibilities that make successful marriages?<sup>5</sup> Can the professional and civic leaders of Oklahoma communities be persuaded to support the schools in implementing realistic courses of instruction in sex education and family life?

Are early marriages inevitable in our present day society? If so, is there more need for understanding of contraception and delaying of pregnancy until the girl has reached a safer age for having babies and



the boy has attained higher intellectual and vocational goals?

There is a great deal of concern among parents, educators, and social agencies relative to this problem. The public may be much nearer to facing it than some professionals realize. In fact, in many sectors there seems to be not only a readiness, but a demand that something be done. If this is the case, should not medicine, in keeping with the esteem which society has traditionally held for the physicians' knowledge of health matters and their professional obligation to society, rise to the occasion, gather other professional and civic leaders, and make a concerted effort to develop some solution to the problem. Leadership and solid backing to an ongoing and realistic program—not a one time affair—can help. Physicians can contribute by lectures and talks, but this must be a part of a well-developed, long range plan to increase knowledge to the end of changing attitudes.

Physicians who wish to become more knowledgeable in the psychological aspects of sex education may get help from the faculty at the Youth Counselling Clinic at the University Medical Center.—*John W. Shackelford, M.D., M.P.H., Director, Division of Maternal and Child Health, Oklahoma State Department of Health* □

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## Ileostomy and Colostomy Association of Oklahoma City

THIS ASSOCIATION, a member of the American Cancer Society and the United Ostomy Association is dedicated to the rehabilitation of *all* persons with an ostomy—colostomy, ileostomy, ileal bladder or ureterostomy surgery. Although this man-made eliminatory opening is foreign in nature it does not modify one's social existence. The emotional acceptance of the surgery, instruc-

tions in the non-medical management of the stoma and an appliance which fit well are the most important steps to complete rehabilitation.

Association with local ostomy groups and their members accelerates the process of readjustment. Our association provides a visiting service by members qualified to give assistance in rehabilitating new ostomy patients. Regular monthly meetings are scheduled where healthy ostomates give mutual aid, moral support and practical information to new ostomates. This service is also available to the doctors and nurses who care for them.

Many doctors can do the surgery, but they don't know what it is like to have an ostomy until they have lived with one. There are many patients who have had successful ileostomy or colostomy surgery, have made complete physical recovery—and then have become misfits because of an ill-fitting ileostomy appliance or irrigation problems. Because of the nature of this surgery people do not talk about it, our only hope of reaching ostomy patients is through the physician. Education of physicians as well as patients must be our constant endeavor.

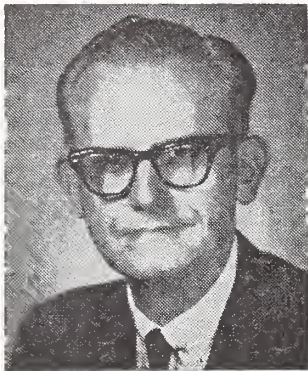
Meetings are held the second Monday of each month in the conference room of the Presbyterian Hospital, Oklahoma City, at 7:30 p.m. For further information call SU 9-5995 or WI 2-7186. □

## AMA News

THE *AMA News* is requesting letters from physicians throughout the United States to include in an expanded letters-to-the-editor department called "As Others See It." This section now fills all of page five in the weekly publication and is intended to cover a range of individual physicians' views on many subjects representative of various geographical areas and types of practice within the country.

This commendable project deserves attention from everyone who has suggestions for the *AMA* or complaints about it; it is especially recommended for certain highly vocal individuals who have been known to complain that the *AMA* is too big to listen to the multiple, divergent opinions of its members. □





Another year has passed and we are now ready to urge you to make plans to attend your annual meeting, May 16th-17th-18th, at the Skirvin Hotel in Oklahoma City. We have a top-flight program arranged. The scientific meetings, the social events, and the exhibits will be "better than ever" and you cannot afford to miss them.

One annual activity of interest is the reference committee hearings which will meet this year beginning at 4 p.m. on Friday, May 17th. All items of state association business are considered by an appropriate reference committee. The committees then bring back recommendations to the House of Delegates for action the next day. While only your elected representatives may participate in the deliberations of the Board of Trustees and of the House of Delegates, any associa-

tion member may take the floor in a reference committee meeting and express his or her opinion. For some reason our members do not realize that they are welcome at these meetings. They express their views most forcefully in the coffee shop, lounge or locker room, but they do not appear to speak to the group capable of taking action—the reference committees. The recommendations of the reference committees may be altered by the House of Delegates on occasion, but they are seldom completely disregarded. Hence a mechanism exists by which an average member may profoundly influence the course of action of his medical association. The influx of independent ideas into organized medicine is needed very much. Organized medicine at all levels has been accused of being inbred and backward. If this is so, it is because not enough doctors take an interest in participating in the affairs of their organizations.

So come to your annual meeting. Enjoy it by participating in *all* its activities. Your officers will all be looking for you there!

Sincerely yours,

Maxwell A. Johnson



# Amblyopia Detection: Current Status and Future Prospects

THOMAS M. AABERG, M.D.

*Amblyopia has a prevalence of 1.5 to 2.8 per cent of the population. Approximately 8,000 Oklahoma children, age three to 12 years, therefore suffer from this disease. A discussion of the problem follows and a protocol for amblyopia is presented.*

## I. Amblyopia Detection: Why it is Necessary and How it can be Achieved:

Amblyopia exanopsia is one of the most common diseases of childhood. By definition amblyopia is the loss of vision through disuse of an eye. This disuse can result from a number of factors, but in children it is most commonly due to strabismus or to a difference in refractive error between the two eyes. The incidence of amblyopia varies among the different studies which have been published. Nevertheless, there is general agreement that the ability to read no better than the 20/40 line, when the opposite eye reads 20/20, is a definitive criterion of amblyopia. The incidence then is one and one-half to two per cent of the population.<sup>3</sup> A further study found such a two line difference in visual acuity between the two eyes in 1.2 per cent of the children tested.<sup>3</sup>

Although some exceptions exist, the majority of ophthalmologists and orthoptists

agree that success in the treatment of amblyopia is proportional to the age at which treatment is begun. This necessitates a continuing effort to lower the age at which visual defects are detected. Because preschool children are usually incapable of informing their parents of existing visual disorders, it is imperative that all children have a routine eye check between three to five years of age. Although crossed eyes may improve cosmetically as the child ages, the visual dysfunction (amblyopia and loss of binocular vision) worsens with time. By school age the battle is often won or lost.<sup>4</sup> All doctors who treat infants and children are urged to incorporate a visual examination in their routine examination. However, because of the magnitude of this problem and the current lack of lay education, the community also has a responsibility for the detection of this potentially disabling condition.

Vision screening programs are designed to meet this responsibility. They are viewed as a stop-gap measure to provide a needed service until the time when all children receive visual evaluation through their family medical resources. The objectives of such vision screening programs are: (1) to identify children who *may* have visual problems; (2) to refer these children for a professional examination and needed health services. It must be emphasized that screening is not a diagnostic procedure. As the term implies, screening only sorts out those children who *possibly* may have eye abnormalities. Un-



der no circumstances do the personnel involved in the screening procedures attempt to diagnose a child's difficulty.

The following sections discuss the magnitude of the problem in Oklahoma and the reliability of various testing procedures and a formulation is proposed for a model vision testing program.

## II. Magnitude of the Problem in Oklahoma:

A survey was conducted in Oklahoma recently to determine the percentage of school and preschool children who participate in vision screening programs.<sup>2</sup> This survey did not take into account those children tested by their private physicians, but only those tested through school vision testing programs, county health department programs, lay service-group testing programs, etc. During the past school year, 210,676 children participated in such programs. The majority, however, were not tested until after the sixth year of age—an age when their visual pattern is fixed. While 50.6 per cent of the counties reported the existence of pre-school vision testing programs, most limited their programs to the Headstart groups. It is therefore apparent that the preschool vision testing is a long way from its goal in a majority of the counties. The small number of existing preschool programs reflects the problems involved in setting up and running such a program. It is not only more difficult to test a child of preschool age, but it is particularly difficult to mobilize community enthusiasm necessary for the success of the program. Preschool testing, as opposed to school testing, requires that parents bring children into the testing sites. This in itself is a major publicity undertaking.

Only 19.6 per cent of counties in Oklahoma incorporate a test for fusion (binocular vision) in their vision testing programs. The remainder of the programs rely entirely on visual acuity testing as the sole means of visual evaluation. Without a test for binocular vision a certain percentage of children who lack the ability to use their two eyes together, although maintaining normal visual acuity, will be missed. An example of such a condition is illustrated by alternating esotropia.

## III. Vision Screening Procedures:

The basic minimum vision testing procedures have been outlined by the National Society for the Prevention of Blindness.<sup>9</sup> Authorities agree that a careful, painstaking test for central distance visual acuity is the most important single test of visual ability.<sup>8</sup> To secure an accurate visual acuity determination in a preschool child, the testing personnel must be carefully trained and the program must be run without areas of uncertainty. Instructional courses for organizing such programs have been worked out by the National Society for the Prevention of Blindness, Inc., and are available in Oklahoma through a local chapter, the Oklahoma Society for the Prevention of Blindness.\*

Further testing procedures supplement the visual acuity evaluation. There is some controversy as to which supplementary tests give the greatest degree of accuracy and dependability. In many states a standard battery of tests, such as the Massachusetts Vision Test, are used. Such a battery includes a Snellen Vision Test, a test for hyperopia, and a muscle balance test. An Oregon study, in which this battery was used, found that 61 per cent of the referrals came from the visual acuity testing with 26 per cent from the muscle balance testing. Of the visual acuity referrals 82 per cent were correct, and of the muscle balance referrals 62 per cent were correct.<sup>7</sup> A similar study in St. Louis revealed that 54 per cent of the referrals were for visual acuity inadequacy, and 15 per cent from muscle balance inadequacy. Referrals from the former were 86 per cent correct, and the latter were 44 per cent correct.<sup>5</sup> These studies indicate that visual acuity testing accounts for the greatest number of referrals and has the lowest false positive referral rate. Nevertheless, it is apparent that a significant percentage of abnormality would be missed without a muscle balance or fusion test (six to 17 per cent in these studies).

A study at Tinker Air Force Base in Oklahoma among military dependents to establish a protocol for detecting the maximum number of visual abnormalities with a minimum number of unnecessary referrals further clarified the problem of false positive testing results. Two hundred forty-two chil-

\*Oklahoma Society for the Prevention of Blindness, 430 Northwest 12, Oklahoma City, Oklahoma.



Table 1

## Referrals: History vs. Screening Procedures

	Total	False Positive Rate	Strabismus and/or Amblyopia
History	33	78%	6%*
Screening Procedures	25	44%	56%
Total	58		

\*Remaining 16% had miscellaneous ophthalmological problems.

dren between ages three to five years were tested. The program was entirely voluntary. All visual acuity testing was done by Red Cross volunteers trained by the Oklahoma Society for the Prevention of Blindness. The general format of the program conformed to the protocol established by the Neurologic and Sensory Disease Section of the Oklahoma State Health Department. Three tests for muscle balance and fusional status, *i.e.*, the Hirschberg Corneal Light Reflex test, the Worth 4-Dot test, and the Cover test, were incorporated into the protocol. An Air Force corpsman, previously instructed in the procedures, performed the tests. A history was also taken from the parents asking three questions: (1) family history of deviated eyes; (2) occurrence of deviation of the child's eyes; and (3) history of any ocular abnormalities. A child who failed any part of the examination, *i.e.*, the history, the visual acuity, or any of the muscle balance or fusion tests, was referred to one of three examining doctors and was rechecked the same day. Any abnormality detected on the recheck was further evaluated later under cycloplegic conditions. There was, therefore, 100 per cent follow-up on the day of the original screening and no possibility of an error in the false positive rate.

Table 1 gives the results of this screening program. There was a 9.5 per cent overall incidence of ocular or lid disorders in this population. The incidence of amblyopia and/or strabismus was 4.9 per cent. It should be noted that these figures cannot be taken as representative of the overall military dependent population and certainly not equated with a nonmilitary population. Studies of military and clinic population often project a falsely high indication of the incidence of amblyopia.<sup>6</sup> This study is valid, however, in demonstrating the false positive referral

Table 2

## Referrals from Screening Procedures

Test	Number Referred	False Positive Rate	Percentage of Correct Referrals
Visual Acuity	10	40%	43%
Hirschberg Test	12*	42%	50%
Cover Test	12*	50%	42%
Worth 4-Dot	2	None	14%

\*10 cases were positive by both Hirschberg and Cover Test.

rates for the various testing procedures. It can be seen that the highest false positive rate came from referrals due to abnormalities of the past history (table 1). It would therefore be recommended that screening procedures eliminate this part of the protocol with the possible exception that a child be referred if the mother states that the child's eyes have been seen to deviate. The visual acuity testing accounted for 40 per cent of the referrals and had a correct referral rate of 60 per cent. Visual acuity testing in young children must be expected to have a higher false positive referral rate than that obtained for school children. The combination of the three muscle imbalance and fusion tests accounted for 60 per cent of the referrals and had an overall correct referral rate of 58 per cent. Of these three tests, the Hirschberg test and Cover tests detected the greatest number of abnormalities while the Worth 4-dot test detected the least. The Worth 4-dot test had the lowest false positive rate while the Hirschberg and Cover tests has the highest. However, both cases detected by the Worth 4-dot were missed by the other tests. It is therefore apparent from this study that muscle balance or fusion tests add to the ability of the screening process to detect abnormalities. In fact, the combination of the three tests

*Thomas M. Aaberg, M.D., a graduate of Harvard Medical School, has been certified by the American Board of Ophthalmology. He has been Clinical Instructor of the Department of Ophthalmology at the University of Oklahoma School of Medicine and Consultant in Ophthalmology at the Oklahoma State Health Department and is presently taking a special National Institute of Health Fellowship in Retinal Diseases at the Bascom Palmer Eye Institute, Miami, Florida.*



detected more abnormalities than did visual acuity testing. It is recognized that at the same time there will be more false positive referrals, but the reported rates are within an acceptable level. It should be pointed out that the Cover test is not easily performed by paramedical personnel and was done on this study only out of interest. This test, therefore, is not recommended as part of a routine screening protocol.

Further information regarding the problem of false negative and false positive referrals from the Hirschberg Corneal Light Reflex Test has been obtained.<sup>10</sup> One thousand children were tested in double-blind fashion by four nurses and two ophthalmologists. The children were initially screened by the nurses who had been trained in the technique of the Hirschberg test. They were immediately evaluated in a double-blind fashion by one of two ophthalmologists using the Hirschberg and Cover tests. While it is not possible to make concrete statements about the false negative rate, due to the statistical lack of significant pathologic cases, it is most significant that there were no false positive referrals. The statistical conclusion of the data indicated there was no difference between the results obtained by the nurses and those of the consulting ophthalmologists.

As a result of this study, an instructional movie was produced demonstrating the technique of the Hirschberg Corneal Light Reflex test.<sup>1</sup> This movie illustrates the corneal light reflex in normal and abnormal states.

#### IV. Suggested Protocol for Screening Programs:

It has become apparent that a model protocol would be useful in establishing further vision testing programs. Past experience has revealed that the majority of work in such a program is concerned with initial planning and publicity and subsequent follow-up. Actual screening procedures, if adequate training sessions are employed for testing personnel, consume a minority of the time. Nevertheless, the overall program involves a great deal of time so it is imperative that nonmedical personnel be used as much as possible. To be successful the program must be a community based operation

run by and supervised by the local medical community. Publicity and initial planning can be performed adequately by local service groups. This entails carefully planned publicity through newspapers, radio, etc., together with actual door to door canvassing from a prepared preschool and school census list. Testing personnel can be drawn from local service-groups to operate under careful medical supervision. It is well established that such groups can be trained well enough to perform various portions of the program reliably. The actual testing protocol should have a test of visual acuity as its basic parameter. Tests of muscle balance (such as the Hirschberg Corneal Light Reflex test) and fusional ability (such as the Worth 4-Dot test) will serve to supplement the program. The final follow-up can be handled best by local medical facilities, preferably the local county nursing staff.

While it is recognized that all programs will have significant flaws, *i.e.*, unnecessary referrals, etc., it is believed that this protocol will minimize such problems.

#### SUMMARY

The historic basis for amblyopia detection programs is described. Data illustrating the current status of such programs in Oklahoma is presented and future goals are discussed. Actual testing procedures are evaluated in regard to past studies and a recently conducted screening program. Finally, a basic protocol is presented as a guide for future screening endeavors. □

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# Library Service For Health Care

VERN M. PINGS, Ph.D.

*Good health care depends upon knowledgeable physicians. Access to the written record of medicine is a necessity. Library networks can assure access for each physician.*

**E**ACH DISCIPLINE and profession has a set of principles and concepts under which it operates. The fanatics of a discipline, or to be a bit more charitable, those practitioners who have a strong commitment to their scholarship, argue that if society would adopt their world view, problems would disappear and a utopia would exist. Although I am not that egocentric to think that all society's problems, or even its health problems can be solved if we have more and better medical libraries, I am convinced that good medical librarianship is an important element in providing good health care. This paper is a discussion of some of the attitudes and operating principles which have developed in our effort to create a dependable medical library network in metropolitan Detroit.

We are constantly reminded in the scientific press of the amount of money that has

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been invested and the number of people engaged in biomedical research. This investment has caused an information crisis because of the quantity of knowledge that has to be disseminated to such a large number of people. Indeed, the 70,000 biomedical research workers have problems in sharing their knowledge, but it also has to be admitted that the knowledge created by the biomedical scientist must be applied to individual health problems before society obtains a benefit from the support it gives its biomedical scientists. A great deal of effort, much of it overpublicized, has gone into trying to improve information services for the research scientist, but very little effort has gone into developing or even supporting information services for the medical practitioners.

Health care has become increasingly institutionalized in the hospital. The hospital has become one of our nation's major institutions, employing in 1965 over 1,950,000 people.<sup>1</sup> It is today the major teaching environment for the health professions. One should not be misled by an apparent change in the curriculum of the health care professions. Indeed, nurses, cytotechnologists, physical therapists, and many other groups have formalized their education through association with a college or university, but no degree is given until the student has spent a certain amount of time working and studying in a clinical environment. The teaching function of the hospital can be even more dramatically demonstrated in physician edu-



cation. In 1945 there were two medical students for each intern and resident. By 1955 there were as many students registered in medical schools as there were interns and residents. Today there are four individuals in postgraduate medical education programs for every three medical students.<sup>2</sup>

One view of the practice of medicine is that it is the application of scientific knowledge to individual health problems. A physician in studying an individual's health problems makes decisions which, in a hospital, are interpreted into actions by the health team. A nursing action performed in ignorance of the significance of the physician's decision is dubious health care. If this oversimplified picture of health care is accepted, one can begin to see some of the difficulties in our existing social organization for the communication of knowledge to the health practitioner.

The thousands of biomedical investigators society supports are concentrated in a few hundred academic and research institutions which have a tradition of collecting, storing, and retrieving the records of the investigators. Although the Joint Commission for Accreditation insists that a hospital have a library as one of its facilities, what this library's function is has not been defined. But whatever the function, practicality dictates that this library cannot be, at least at present, a research-resource library. If good health care requires access to the scholarly record, then the hospital has no other choice than to seek the means to utilize resource libraries. The resource libraries, however, have not been organized to make their materials available except to those individuals who are members of the institutions that support the libraries. This situation is another example of the tenet that our society to fulfill its goals must reorganize itself to serve regional needs. The belief in this concept of regionalism rests on the supposition that the sharing of resources, both human and material, can accomplish what our more individualistically organized institutions cannot. A lot must occur before an intellectually conceived proposition such as regionalism can be translated into acceptable and useful actions.

The trend of the time is that new human and interinstitutional relationships must be created to improve *access* to the scholarly record. If this access is to be attained through sharing and cooperation, the first step is to talk to those with whom we want to share and cooperate. This is obvious, if not trite. But because it is so obvious, we frequently miss its import. Within the next year somewhere between 20 or 30 documents will be prepared throughout the nation which will have a title something like, "A plan for the establishment of a regional medical library." The introductory statement of the papers will vary considerably, but the conclusions will be roughly the same, mainly that several surveys and studies are needed to determine

- 1) The number of biomedical personnel and the number of institutions of the area,
- 2) What the existing library resources are,
- 3) What areas of cooperation already exist,
- 4) What specific information needs are not being met, and finally,
- 5) What modern technology, which usually means computers, can be utilized to satisfy unmet needs.

These studies and surveys must be done, but to insure that the goal of access to the scholarly record is accomplished they must be undertaken with an attitude that is acceptable to all those being studied and surveyed. Let me be specific. Because an institution is located in an urban medical center filled with hundreds of patients with a budget in the millions of dollars does not make it a better institution than one with fewer patients and a smaller budget. Those individuals working in the rural community hospital are just as, if not more, sincere as those working in the urban medical center. To repeat: The sincerity and dedication of an individual has little to do with the size of the institution in which he works. A fundamental attitude that must underly a regional information system is that its purpose is to improve health care to individuals and is only incidentally related to the building of single institutions.

With this background I hope you can accept my conviction that there should be no such thing as a *small* library. The technical



procedures of maintaining bibliographic control of a library with 1,000,000 titles differ greatly in detail from the library with only 1,000 titles. But these are only technical details and are of little interest to the physician, nurse, or hospital administrator in his search for information. No library in the nation serving an active group of researchers or practitioners, no matter how large, is self-sufficient. In this sense *all* libraries are small. My juggling of words is meant to impress you with a specific attitude about the function of a library. The materials selected and the work of the library staff must be directed toward revealing not only the information stored on its shelves, but also the information not stored on the shelves.

All of this discussion can be summed up in two overworked words, *communication* and *distribution*. The aim is to accomplish better distribution of the information stored in the scholarly record of medicine. One means of distributing information is through libraries. Libraries are supported by an institution and, unfortunately, their status as a functional unit is most often determined by the status of the parent institution. In developing a better distribution system for the scholarly record we cannot start with prejudicial or indifferent attitudes toward individuals and their institutions. We have to accept and sincerely believe that no one hospital, school, physician, or librarian is better than another or has more right than another to the access of the scholarly record.

I shall illustrate my point by relating a recent discovery in Detroit. During the past six years librarians from universities, colleges, hospitals, clinics, and industry have been meeting regularly. We have identified ourselves informally as the Detroit Medical Library Group. During this period we have accomplished several things together which would have not been possible without the action of a group. First, a union list of serials was produced which we have been able to keep up to date with new editions and supplements. A union catalog of monographs beginning with 1965 imprints has been published at six month intervals. We know what resources we have and who has it.<sup>3</sup> With this record in book form that is on every librarian's desk we have improved our inter-library loan system. For several years now we have been able to provide one day serv-

ice, that is, a request made by a borrowing library can be delivered to the individual requesting the document the next day. Because of the hard work required of each of the librarians of the group, we have learned to know one another so that we now not only share our collections fully but our competences. Finally, because of the assurance we have gained in providing better library service with these activities, we have begun to study ourselves, our purposes, and our functions in ways we did not think possible two years ago.

From this description you might gain the impression that we are a pretty sharp group. We have been recently humbled. In a survey of 85 hospitals in the metropolitan Detroit area we found 12 hospitals had no library; 34 hospitals had a library organized as a separate department; in 39 hospitals the library is part of the medical records department. Only one of the latter group of hospitals is active in the Detroit Medical Library Group. Why only one? The simple brutal answer is that we did not recognize that the medical record librarians could deal with the biomedical information problems as we see them, nor did the medical record librarians feel what we were doing related to anything they did. Since we have failed to communicate with almost one-half of the institutions in our area, we cannot say we have anywhere near a true library network.

A theory or philosophical tenet is mere *flatus vocis* unless it makes a difference in our actions. That everyone of the health professions has a right of access to the scholarly record is easy to say and readily acceptable to all of us. The right of access turns out to be in practice a matter of giving privileges by libraries to groups of people who previously may not even have been allowed to come through the doors. The institutions which have invested their money and effort into building a library over many years are quite rightly possessive of their storehouse of knowledge. Why should those of us who have been as busy as bees have any obliga-

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tion whatsoever for the unheeding grasshoppers?

My only answer to this question lies in our religious heritage. It has been demonstrated through the millennia that a generosity of spirit is more productive in the long run than any other attitude. When we help another individual or institution we are, in effect, helping ourselves. This ethic pervades our culture as demonstrated by the existence of local education and welfare agencies to the design of our foreign policy. Improving the means of distributing medical knowledge is within our tradition of sharing our resources for the benefit of all. Beneficial sharing of resources does not mean that the rich just give some of their excess to the poor. Early in our history we began to tax the rich and the childless so that we could build schools to educate the poor as well as the rich. We all have the privilege and the right to use the educational system, but to exercise this privilege we have to demonstrate responsibilities for ourselves as well as accept the responsibility to keep the system in operation.

My reason for entering into the philosophical and historical discussion is to build an analogy, albeit imperfect, which can relate to the development of a regional health sciences information network. I hope it is clear that even if the few resource libraries open their doors, no network is formed unless there is a concomitant acceptance of responsibility by those given new privileges. Without this sense of responsibility the resource libraries would dispense their wealth without assurance of any accomplishment. But what does this responsibility entail? Unfortunately, there is no simple or even complex answer to this question. An information network to support health care has not been constructed except on paper. I can only provide some questions that need to be asked which when answered might give an indication what the relationship between privilege and responsibility might be.

In metropolitan Detroit there are 170 postgraduate medical education programs with 1,543 students in 38 institutions.<sup>4</sup> All of these institutions have at least a room containing some books and journals which is identified as their library. From data we

have collected we know that there are some of these institutions that have no facility whatsoever to obtain materials from other libraries, that is, they have no interlibrary loan service. The intern and resident has no choice except to go to other institutions if he wants to read materials to supplement his educational experience. In one hospital we found that on the average one item per year is borrowed for each intern and resident from another library.<sup>5</sup> In still another hospital the rate of borrowing is six times per year for each intern and resident.<sup>6</sup> Although we feel we have a fairly good interlibrary loan network operating in metropolitan Detroit, if the system had to distribute six items per year for each intern and resident, plus supplying other requests, the system would be immediately overloaded. This variation in interlibrary loan requests among hospitals cannot be due to chance. Are the variations due to the attitude of the librarian, the medical director, or the institution's administration; or are the education programs different? Is the difference caused by the organization of library materials, or is it because of the location of the hospital? Simple questions to ask, but hard ones to answer.

As pointed out earlier, studies must be undertaken before rational development can begin. Whoever produced the first questionnaire unleashed a monstrous device into our society. Although I have to admit that one of the ways to get information is to ask for it, all too frequently the questionnaire-survey only tells us what we already know. I have no magic method to suggest which can reveal all that needs to be known to construct an improved library network, but I can report that the investigations we have undertaken where we observed, counted, or otherwise examined operating environments and then analyzed the data for differences and similarities were more fruitful than trying to describe a total environment through a survey. Specifically, this method of study is one of self-examination and self-evaluation. Self-examination is a painful process and requires an objectivity that is not simple to develop. Such information as I used above in which we observed a difference in the amount of interlibrary lending among institutions should not be used to judge the goodness or badness of a particular institu-



tion. Such criticism is unwarranted if for no other reason than we are ignorant of what ought to be the norm.

I should like to make an observation about the spin-off one obtains by this method of study. The first thing is that one begins to find inefficiencies and weaknesses which can be corrected without infusions of massive amounts of money. All too frequently we hear the comment that the solution to library service problems is a matter of money—nothing can be done until more money is found. Indeed, infusions of hard cash are needed, but to hire more people to distribute more books inefficiently does not seem justifiable. I would hope that when grant applications for regional medical library programs are processed at the National Library of Medicine that they will be scrutinized for evidence that the applicant has made a real effort to utilize his resources with responsibility.

If inefficiencies are corrected and these in turn are examined and then compared between operating environments, a built-in quality control results. Monitoring devices present themselves. As I am sure you have gathered by now, we studied the interlibrary document distribution procedures in Detroit more than any other aspect. Under the present procedures the Wayne State University Medical Library can fill 80 per cent of the interlibrary loan requests the same day they are received. At the end of each month the total requests are counted and the percentage of unfilled requests calculated. The 80 per cent level had been maintained for about a year and a half. In January the percentage filled dropped to almost 70 per cent. Since it costs the university almost the same amount to fill a request as not to fill a request, this meant that almost 30 per cent of the time and effort of the interlibrary loan staff was wasted as well as adding an additional expense to the borrowing libraries since they would have to go about reprocessing the request. Obviously, something was wrong. We examined the 313 unfilled requests.

- 1) We found that more than the usual number of requests were for serials in the bindery. A large shipment of year-end bindery had gone out and the binder was late in returning the previous

shipment. Obviously, we need to look more carefully at our bindery procedures.

- 2) A large number of requests were for materials that were in circulation. One possible explanation was that we were one month behind in sending out overdue reminders.
- 3) There was a 50 per cent increase in the number of requests returned with the note as "title not owned," "missing" and "reference unidentifiable." On examination, we did indeed own some of the titles and the items were *not* missing. Had our housekeeping been good and our routines operating properly there would have been no more items unfilled for these reasons than in other months. A large share of the requests marked "reference unidentifiable" came from one institution. A call to that library reaffirming the procedures and rules for making interlibrary loans should prevent the unwarranted expense of processing such requests in the future.<sup>7</sup>

I had another purpose for discussing this recent experience other than to demonstrate how self-study and comparison can produce meaningful information and to reveal that the Wayne Medical Library and one of the libraries of our local network are not all they should be. Library procedures are highly interrelated. A failure or relaxation in one operation can affect a library's ability to deliver documents. The ability to deliver eight of every ten documents requested is, perhaps, a tolerable level for a research library. When this is reduced to seven out of ten, using the library becomes a frustrating experience. The point I wish to make is that library service, just as with any other service, must be dependable.

Listening to librarians and administrators one might get the impression that the sole criteria of library service is the number of volumes owned. There are several areas in the country that are indeed rich in books, but one cannot say that a functional regional system is operating which satisfies the information needs of the health professions. We are back again to these general and vague concepts of *communication* and *distribution*. A network no matter how rich in



resources cannot be said to be a good one if the communication and delivery operations vary from day to day. The basic question that has to be asked is what do we expect to accomplish by creating a regional information network?

If health care is a decision-action process of applying knowledge to individual health problems, then the speed and dependability with which information can be transmitted is important. One can view health care in terms of time units. First, there is the situation in which the physicians and others must make immediate decisions and they must do their job with the knowledge they have in their heads and with the skills they possess. A next time unit might be described as one in which a decision can be delayed for a matter of only a few hours. If the physician does not have the knowledge to act, his only recourse is to call a consultant. There is no automated system yet available, nor will there be in the next few years, that can integrate all the knowledge into the few simple sentences that can be said by a specialist consultant to start the actions necessary to save the life of the severely ill. A third time period might be one in which the decision-action part of health care can be delayed for a matter of days. The physician in this situation may, therefore, have the time to find information in a library and to integrate and to relate this information to the health problem.

One who is designing and planning a system which is to deliver information to support health care must have these or similar time relations in mind if he is at all pragmatic. I have no hope that any information system will be developed within the next ten years which will be generally applicable which will be able to replace the consultant. Besides, if such a system were developed, it would only be creating another social problem, the technical unemployment of the medical specialist. However, we can build information systems which can function dependably, if we keep in mind three variables, resources, time, and distance. This might be shown diagrammatically as four concentric circles (figure 1). Confining this program to a document delivery system, the system

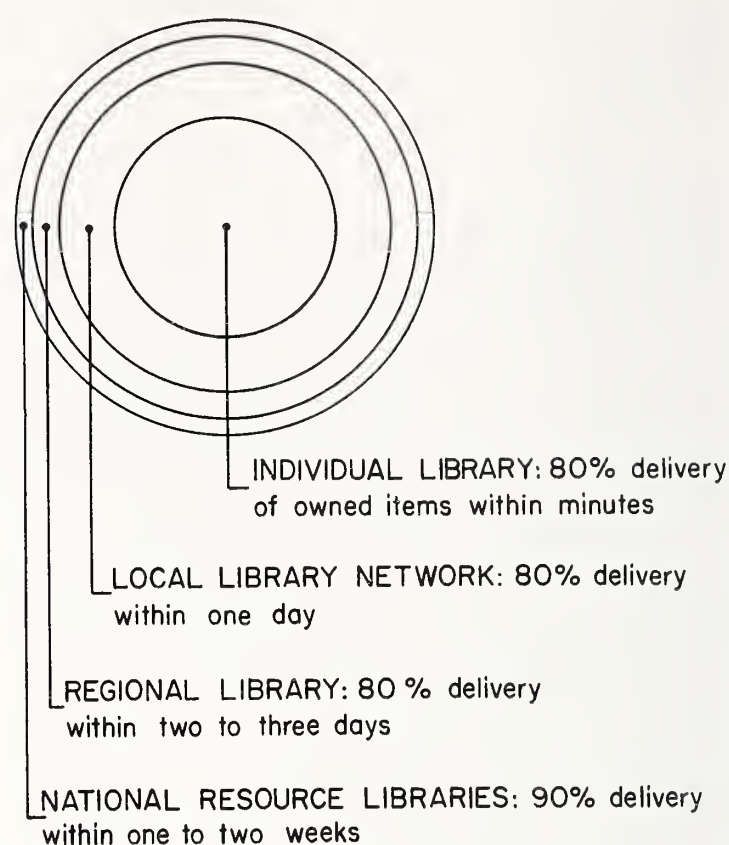


Figure 1. Document delivery time within any health science library network.

should operate so that all libraries deliver a given percentage, say 80 per cent or 90 per cent of the documents it owns in a matter of minutes. The system should be so designed that the same proportion of requests to the known resources of local libraries can be supplied in a matter of a day; those of a complex of regional resource libraries in a matter of two or three days. Our national resource libraries probably cannot be utilized as dependably if measured in time units because the distance is not a constant factor as with the other library units.

#### SUMMARY

What I have been trying to convey in this paper is that we need to change and develop new attitudes before we can create a dependable communication and distribution information network to support health care. We need a new set of priorities for action than the ones we have been operating with over the past decades. Although I have pointed out some of the general areas on which I feel we must do some heavy thinking, there are many others I have not touched upon; for example, can the same information system which is designed to work through health care institutions be suitable



for the information needs of the physician while he is in his office? Can a system developed to supply information to support health care also be used to support educational programs? But to review some of the points I have tried to make:

1. Although improved information services for biomedical scientists are needed, information services for the health practitioner are, comparatively speaking, almost nonexistent.

2. The hospital has become not only the major health care institution of our society, but the hospital is the main teaching environment for the health professions.

3. New human and interinstitutional relationships must be created to improve access to the scholarly record.

4. If we expect to carry out the studies by which we can collect the information on which to build a viable information system, we must change some of our prejudicial and indifferent attitudes toward people and institutions.

5. New definitions of privileges and responsibilities need to be defined for the full sharing of existing library resources.

6. Although no sure investigative methods are available, the approaches which will

probably be most fruitful are those which concentrate on examining operating situations and which permit the development of monitoring procedures.

7. The planning for a dependable regional information system must take into consideration the interdependence of three factors, the available resources, the time requirement for supplying information, and the distance between libraries, but that the dependability of the system is measured in time units. □

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# The Physician and The National Library of Medicine

LEONARD KAREL, Ph.D.

*Established in 1836 to assist in the advancement of medicine, the National Library of Medicine is now the physician's greatest resource for reference and research assistance.*

**W**HEN THE National Library of Medicine was established in 1836 as the Library of the Surgeon General's Office (U. S. Army), the Surgeon General was authorized to spend \$150 for medical literature. Today the Library, located at Bethesda, Maryland, near Washington, in a five-story contemporary building which it has occupied since 1962, is regarded as the world's largest in biomedicine. Among its holdings of 1,300,000 items, in seventy languages, are 315,000 monographs; 310,000 bound journal volumes; 285,000 theses; 168,000 pamphlets; and 4,500 reels of microfilm.

The Library provides 175,000 interlibrary loans annually, and of these 160,000 are photocopies of journal articles not available

at the requesting local library. Reference personnel answer 10,000 personal inquiries, 10,000 phone inquiries, and 2,000 mail inquiries each year. Requests for 100,000 library items are made by 25,000 to 30,000 persons who use the reading room each year.

The Library is a major publisher of biomedical bibliographies; e.g., *Index Medicus*, *Cumulated Index Medicus*, *Bibliography of Medical Reviews*, *Biomedical Serials 1950-1960*, *Bibliography of the History of Medicine*, and *NLM Current Catalog*. Among other Library publications are *Medical Subject Headings*, the thesaurus for *Index Medicus*; *List of Journals Indexed in Index Medicus*; *National Library of Medicine Classification*; and *Russian Drug Index*.

## THE NATIONAL LIBRARY OF MEDICINE

Known for 86 years as the Library of the Surgeon General's Office, the Library was developed as both a national and an international resource by Doctor John Shaw Billings, Librarian from 1865 to 1895. In 1922, it was renamed the Army Medical Library and in 1952 was again renamed, the Armed Forces Medical Library. In 1956, under legislation introduced by Senators Lister Hill of Alabama and John F. Kennedy of Massachusetts, it was transferred to the

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Public Health Service, Department of Health, Education and Welfare, and named the National Library of Medicine.

The library was established by the Congress of the United States to assist in the advancement of medical and medically related sciences by the collection, dissemination, and exchange of scientific and other information important to the progress of medicine and of public health.

Towards fulfillment of its mission the library (1) acquires and preserves books, periodicals, films, prints, and other library materials pertinent to medicine; (2) organizes these materials by appropriate cataloging, indexing, and bibliographic listings; (3) publishes and disseminates catalogs, indexes, and bibliographies; (4) distributes materials through interlibrary loans, photographic, or other copying procedures; (5) provides reference and research assistance; and (6) encourages, promotes, and supports activities to further the progress of medicine and of public health by strengthening existing services and developing new ones.

The Congressional mandate was strengthened recently when, on October 22, 1965, President Johnson signed the Medical Library Assistance Act, Public Law 89-291 of the 89th Congress. In signing the Act, the President commented that the Nation's medical libraries are a vital link between medical education, practice, and research, and that too little attention has been given to the problem of collecting and sharing scientific knowledge.

The Medical Library Assistance Act is an amendment to the legislation authorizing the establishment of the Library. The Act permits assistance to medical libraries for construction and renovation, for acquisition and for improvement of resources, for training of medical librarians and other information specialists, for preparation of publications, for research in medical library science, and for the development of regional medical libraries. The Act also authorizes traineeships, fellowships, and special scientific projects by individuals or institutions.

Administration of the Act on behalf of the Library is done by the Library's Extramural Programs.

The Library today serves as the principal national focus of resources and programs

for bettering communication in medicine and the health sciences and is encouraging the development of the existing system of medical libraries into a national medical information network. On July 1, 1967 the Library acquired the Public Health Service Audiovisual Facility in Atlanta, Georgia. This facility, renamed the National Medical Audiovisual Center, will coordinate a national program in biomedical audiovisuals.

Access to the collection is facilitated through an interlibrary loan program. When libraries request loans through medical library channels, the National Library of Medicine lends books within the United States and, worldwide, provides single copies of articles from journals which the requesting libraries do not possess and which are not available locally. There is no charge for this service or for other services except special photography.

The library collects materials comprehensively in some 40 biomedical subject categories and selectively in many related categories. The collection, in which are over 19,000 serial titles, is increased annually by 95,000 to 100,000 items. It is estimated that the library now stores 360 million pages, of which 85 million are pre-1870, and that at least 10 million more are being acquired annually.

Its History of Medicine Division alone has between 60,000 and 65,000 printed works bearing publication dates earlier than 1801. Included in the collection are: an Arabic manuscript of the year 1094 on gastrointestinal disease; a collection of palm-leaf manuscripts from Ceylon, in Singhalese; works of Hippocrates and Galen; and letters written by George Washington, by Benjamin Rush, and by Florence Nightingale. Holdings also include 535 incunabula; 33,000 16th, 17th, and 18th century monographs; 1,600 17th century theses and pamphlets; 2,000 early American medical works; and an estimated 60,000 prints and photographs.

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COMPUTERIZED LIBRARY SERVICES

Efforts of conscientious, busy practitioners to achieve and to maintain awareness of the most recent medical discoveries and applications have often led to many and continuing frustrations. The increase in the volume of medical literature and in the number of users has not been paralleled by equivalent growth of medical libraries and of information storage and retrieval methods and facilities adequate to catalog, index, store, and retrieve literature for use of physicians, scientists, and others. Therefore, the Library adopted computerization as a means of assisting, supplementing, and complementing traditional approaches to management of published biomedical literature and pioneered in the use of computers for storage and retrieval of bibliographic information.

In January 1964, a computer-based information storage and retrieval system called MEDLARS (Medical Literature Analysis and Retrieval System) became operational at the library.

MEDLARS joins the professional experience of trained literature analysts and searchers with the processing capabilities of a high-speed electronic computer. The literature analysts, using terms selected from a thesaurus of approximately 7,000 terms, *Medical Subject Headings* (Part II of the January issue of *Index Medicus*), characterize each article by assigning to it a number of subject headings or descriptors. Indexed articles are entered into the computer and transferred to magnetic tapes for storage, and for rapid retrieval. Currently, Medlars contains over 550,000 citations to biomedical journal articles published since January 1964. About 55 per cent of these are in English.

MEDLARS has improved the quality of the Library's monthly *Index Medicus* and has substantially reduced the time required for the production of other Library bibliographies.

*Index Medicus*, a comprehensive, monthly subject-author index, now incorporates 180,000 articles annually from nearly 2,300 of the world's biomedical journals. At the close

of each calendar year, MEDLARS compiles *Cumulated Index Medicus*, a complete listing, with cross-references, of the citations which were printed in that year's issues of *Index Medicus*.

(MEDLARS does not now include monographs, symposia, conferences, congresses, and proceedings not published in journals.)

The journals indexed in *Index Medicus* (approximately 2,300) are selected with the advice of an extramural committee whose decisions are made largely on the quality of the journal under consideration; however, care is taken to assure subject balance. Discussions of journals are based on prior knowledge of the journal and on inspection of the journal by committee representatives. In addition, the committee is assisted by advice from subject specialists. Comprising the present committee are physicians and scientists, medical editors, and medical librarians.

MEDLARS makes possible rapid machine searches of biomedical journal literature to obtain answers to reference questions that cannot be handled expeditiously by manual searches. Machine searches which provide citations to medical literature in specific areas of interest are called "demand bibliographies."

MEDLARS is responding to more than 400 highly specific computer search requests monthly. These requests are coming chiefly from physicians, teachers, and researchers in medical schools, hospitals, universities, and Federal research laboratories.

In addition to demand bibliographies, the Library collaborates with professional societies and other professional organizations in the preparation of "recurring bibliographies"—formally published, widely distributed bibliographies in specialized subject areas of broad interest.

These recurring bibliographies are *Artificial Kidney Bibliography*; *Bibliography of Medical Education*; *Cerebrovascular Bibliography*; *Fibrinolysis, Thrombolysis, and Blood Clotting*; *Index of Rheumatology*; *Index to Dental Literature*; and *International Nursing Index*.

Although the Library supplies the sponsoring organization with citations retrieved periodically from MEDLARS on film ready for offset printing, publishing and distributing the bibliography—on a non-profit



basis—are the responsibility of the sponsoring organization.

At frequent intervals, generally monthly, the Library selects from its demand bibliographies a few considered to be of general interest. Announcements of the availability of these bibliographies, called *NLM Literature Searches*, appear in *Journal of the American Medical Association*, *Public Health Reports*, *Journal of the American Dental Association*, *NLM News*, and other publications including state journals. There is no charge for these *Searches*. Clinicians, educators, and researchers interested in receiving notices on new *NLM Literature Searches* may write to the Office of Assistant to the Director, National Library of Medicine, 8600 Rockville Pike, Bethesda, Maryland 20014.

To enhance effectiveness of MEDLARS, the Library has provided its computer tapes and programs to university-affiliated centers which can make computer-generated demand bibliographies available locally or regionally to qualified practitioners, educators, and researchers. Decentralized MEDLARS stations are now in operation or will soon be in operation at Harvard University, the University of Alabama, the University of California at Los Angeles, the University of Colorado, and the University of Michigan. Others are being considered, and as regional libraries, authorized by the Medical Library Assistance Act, are identified, they, too, will be provided with a MEDLARS search capability.

Two MEDLARS centers are in operation outside the United States: In the United Kingdom under a cooperative arrangement between the University of Newcastle-upon-Tyne and the National Lending Library for Science and Technology at Boston Spa, Yorkshire, demand bibliographies are provided by the Lending Library. In Sweden, literature references taken from Medlars tapes are being provided by the Karolinska Institutet in Stockholm.

Physicians wishing to obtain demand bibliographies are encouraged to seek the advice of local medical librarians on suitability of the inquiries and on the preparation of requests which will elicit the information sought. The use of *Medical Subject Headings*, *Guide to MEDLARS Services*, and an expression of specific interests will help

avoid retrieval of irrelevant citations. Thus, a request specifying animal experiments will help to insure that citations on human studies will not appear in the bibliography; similarly, specifying a single age group will obviate retrieval on all age groups.

Citations may be arranged alphabetically by senior author, by journal title, by language, by subject headings, and by year of publication, and each citation can be printed with the descriptors assigned to it by its indexer. Although the computer can print bibliographies on 8½" × 11" paper or on 3" × 5" cards, usually the printout is provided on the less costly paper.

The elapsed time between receipt of a request and mailing of a bibliography is a function of the volume of searches requested. At present, elapsed time is about three weeks.

It is important to note that MEDLARS does not produce abstracts. It is also important to note that MEDLARS services are not provided for searches which can be conveniently and readily accomplished by the use of published indexes, handbooks, and other reference materials.

#### DEMAND BIBLIOGRAPHY REQUESTS FROM OKLAHOMA

During the period July 1966-June 1967, inclusive, the National Library of Medicine responded to 26 demand bibliography requests from biomedical personnel in the State of Oklahoma.

Examples of these requests are: Physiological Effects of Central Thermal State on Peripheral Temperatures and Dexterity; Drug Therapy of Gastrointestinal Diseases; and Histochemistry of Embryonic and Fetal Connective Tissues.

The distribution of the 26 requests was:

University of Oklahoma	11
Federal	15
Total	26

#### SUMMARY

The National Library of Medicine, now the world's largest biomedical library, was established by Congress to further the advancement of medical and medically related sciences by the collection, dissemination, and



## National Library / KAREL

exchange of scientific and other information important to the progress of medicine and of public health. It has become an international as well as a national resource for publications and other items relevant to medical communication, and renders service on a worldwide basis.

In January 1964, a computer-oriented information storage and retrieval system called MEDLARS (Medical Literature Analysis and Retrieval System) became operational at the Library. This system has improved the quality of *Index Medicus* and other Library-associated publications and has substantially reduced the time required

for preparation and publication of such publications.

The MEDLARS store of biomedical journal articles published since January 1964 now exceeds 550,000 and is growing at an annual rate of 180,000 articles, taken from nearly 2,300 journals. Requests for computer searches come chiefly from physicians, teachers, and scientists in medical schools, hospitals, universities, and Federal research laboratories.

During the period July 1966-June 1967, inclusive, the National Library of Medicine responded to 26 demand bibliography requests from biomedical personnel in Oklahoma. ☐

8600 Rockville Pike, Bethesda, Maryland 20014





# Endrin: A Review

WENDELL L. SOWELL, Ph.D.  
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*This potentially highly toxic chlorinated hydrocarbon pesticide is reviewed in terms of its chemistry, toxicology to humans and animals, physiological mechanism of toxicity, and metabolism.*

**E**NDRIN IS A member of the chlorinated hydrocarbon pesticide group known as the cyclodienes. This group, which includes aldrin, dieldrin and isodrin as well as endrin, is highly toxic to man, animals, and insects through its action on the central nervous system. In general, the toxicology of the cyclodienes is very similar with the most consistent observations following repeated exposure of experimental animals being changes in the liver and kidneys.<sup>25</sup>

Endrin, one of the most toxic cyclodienes, is considered a general poison, killing both by contact and stomach action. It may be absorbed into the body by inhalation, ingestion, or through the intact skin and temporarily stored in the fatty tissue or secreted through the feces and milk.<sup>25</sup> Endrin dissipates from the fatty tissue more rapidly than

other cyclodienes; consequently, it appears to be transitory in the body.<sup>25</sup> No evidence of metabolites or end products has been reported.

This pesticide has produced symptoms in man such as abdominal discomfort, vertigo, insomnia, and weakness of the legs during mild intoxication and nausea and diarrhea during acute exposure. Moderate doses have produced, without warning, a pronounced loss of appetite, loss of weight and convulsions.<sup>25</sup> Due to this comparatively high toxicity, the Federal government permits no endrin residual on crops that are to be consumed by humans or marketable animals. The use of endrin in Oklahoma is restricted and is used at an estimated rate of 50,000 pounds annually, principally for the control of boll weevil, bollworm, cabbage luper and other cotton worms.

## CHEMISTRY

The cyclodiene pesticides are highly chlorinated cyclic hydrocarbons characterized by an endomethylene-bridge structure. Synthesis of these cyclodienes is by a Diels-Alder diene reaction, from which dieldrin and aldrin derive their names. Isodrin and aldrin are structural isomers (endo-forms and exo-forms). Dieldrin and endrin are epoxy derivatives of aldrin and isodrin, respectively (figure 1).

Endrin is a white crystalline solid, and is defined as 1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo-endo-5,8-dimethanonaphthalene.<sup>24</sup> Endrin is stable to basic reagents and alkalies, but

A portion of this review is derived from a dissertation submitted by one of us (W.L.S.) in July, 1967, to the Department of Preventive Medicine and Public Health, University of Oklahoma, Oklahoma City, in partial fulfillment of the requirements for the degree doctor of philosophy. Supported in part by a grant from the U. S. Public Health Service, No. EH 67-635. From the Institute of Environmental Health, University of Oklahoma Medical Center.



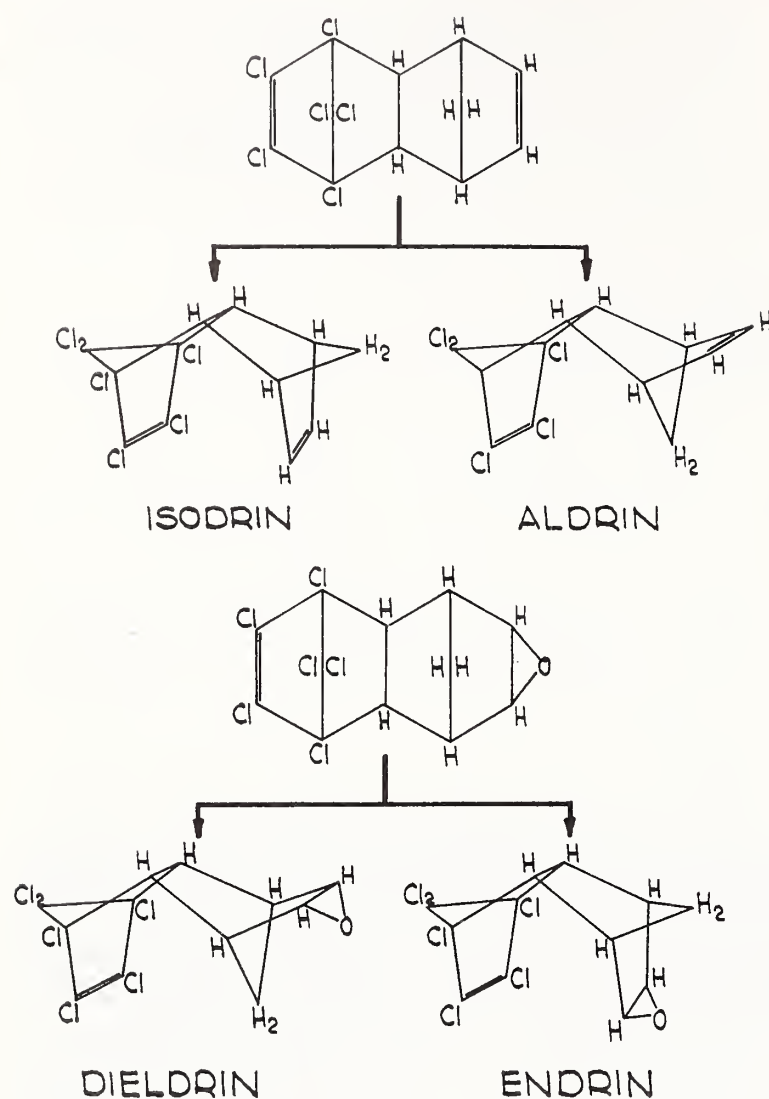


Figure 1. Structural configurations of the cyclo-dienes.

when treated with acids or heated above 200° C, a rearrangement of the molecule occurs with the production of a delta keto and an aldehyde derivative. Endrin is soluble in the usual organic solvents but insoluble in water. Its greatest solubility is in aromatic hydrocarbons such as benzene and xylene.<sup>5</sup>

Endrin may undergo isomerization, rearrangement, and decomposition when exposed to heat, sunlight and ultraviolet irradiation. Degradation under ultraviolet irradiation may be used for identification of endrin on thin layer chromatograms. At the temperature required in gas chromatography pure endrin gives rise to multi-peak chromatograms.<sup>15</sup> Two major peaks of almost equal size are the result of thermal isomerization of endrin to a ketone and an aldehyde. Intermediate to the formation of the ketone and the aldehyde is an enol-like compound.<sup>22</sup>

Sunlight produces the delta-keto isomer, a mixture of polymers, and a carbonyl type

compound.<sup>20</sup> Ultraviolet irradiation (2537Å) produces many of the same products; the mechanism is thought to involve either a hydride shift or a hydrogen abstraction of an epoxy-hydrogen.<sup>15</sup> Uniquely caused by 2537 Å is a hydrogen atom replacement of a chloride atom adjacent to the double bond. The compounds produced by thermal, photochemical, or ultraviolet isomerization appear to be the same.

## TOXICOLOGY OF ENDRIN

### *Humans*

The best available description of the human reaction to a single oral dose of endrin is that of Davies and Lewis<sup>1</sup> in which 59 persons were poisoned by eating bread containing 150 ppm of the pesticide. The flour which had become contaminated in transit, contained 0.55 per cent endrin. Based on this, it was estimated that each person that ate one pound of bread ingested 70 mg of endrin or about one mg/kg of body weight. In most cases, the symptoms developed about three hours after ingestion. Thirty of the group had convulsions which were epileptiform in character. In a few cases semiconsciousness persisted as long as 30 minutes after the convulsive episode. In the less severe cases dizziness, weakness in the legs, abdominal discomfort and nausea occurred. A feeling of confusion was noted by several and a few complained of temporary deafness. In a few cases, weakness, insomnia and anorexia persisted several days, but most of those affected improved within 24 hours even if they had experienced convulsions. There were no fatalities and no apparent latent effects attributable to the incident.

Other cases of accidental oral intoxications include three persons who drank water contaminated with endrin and one individual who ate freshly sprayed blackberries.<sup>25</sup> The typical symptoms were nausea, vomiting, headache and dizziness followed by recovery within 24-48 hours. Only in the latter case did convulsions occur.

There have been 30 cases of accidental ingestion due to gross negligence.<sup>25</sup> This is not many compared to the large number of accidental poisonings caused by the ingestion of commonplace products such as gasoline,



kerosene, polishes, cleaners, and bleaches; however, 24 of the 30 were fatal and five of the remaining six had convulsions.

A total of 69 cases of suicide through ingestion of endrin are known to have occurred in eight countries. Most were reported in Japan and the Philippines but none occurred in the United States.<sup>25</sup>

Exposure by other than oral routes has produced the characteristic sequence of symptoms, beginning with vomiting or convulsions. Very often vomiting is the first indication of the absorption of a toxic amount of endrin.<sup>31</sup>

Only 44 cases of intoxication by inhalation or skin absorption have been reported and of this number, 43 were chronically exposed pesticide workers.<sup>25</sup> Twenty-seven of the 43 suffered only mild intoxication and no time from work was lost; however, the other 16 cases were more serious involving convulsions or loss of consciousness and four of these were fatal. The only recorded case of acute skin absorption involves a small child who, after playing in a puddle of endrin mistakenly used for house spraying, had severe convulsions with prolonged coma and cerebral anoxia which resulted in decerebrate rigidity and permanent brain injury.<sup>10</sup>

#### EXPERIMENTAL ANIMALS

Exposure to airborne endrin under conditions non-lethal to rats, mice, guinea pigs, hamsters, and cats was fatal to rabbits.<sup>28</sup> Loss of appetite, occasional vomiting and hypersensitivity to physical stimuli or noise are usually the first indications of endrin intoxication in dogs.<sup>28</sup> Since the rats tolerated five to ten times as much endrin in their diet as dogs, species variation was obvious in the ability to resist the effects of chronic doses of endrin. Sex difference in the same species was not always pronounced; however, female rats were found to be more susceptible to endrin than males; the reverse was true for quail.<sup>2</sup>

Following prolonged absorption of endrin, animals exhibited diffuse degenerative lesions of the brain, liver, kidney, and adrenal tissues.<sup>31</sup> Necrosis of the proximal and distal convoluted tubules of the kidney and fatty vacuolization of the cytoplasm of hepatic cells were frequent even when other

organs were normal.<sup>31</sup> Cellular degeneration has been noted in rat livers even when there was no cytoplasm vacuolization. Basophilic cells were observed in zones around the central veins in the liver lobules as early as the seventh day after ingestion of a single dose of 3.5 mg/kg of body weight. These lesions advanced in intensity as the ingestion of endrin continued.<sup>31</sup>

Irregularly distributed foci of swollen hepatic cells with cytoplasmic granules in their periphery were seen in rodents that survived two years of endrin ingestion.<sup>26</sup> No increase in the incidence of tumors was noted in animals subjected to endrin when compared with a control group not exposed to endrin.<sup>26</sup> Increase in permeability of the so-called blood-brain barrier was observed<sup>23</sup> following the absorption of endrin; the same author found that intravenous injection of trypan blue blocked the initial acute reaction to the absorption of endrin. Treon<sup>26</sup> observed that endrin when incorporated in-

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to the diet of dogs, was stored in the fat and liver with smaller quantities in the kidneys, muscle, and brain. The amount stored did not increase in proportion to the amount administered.

Endrin storage in the body depends on the lipid content of the tissues; however, it was found that female rats had a higher storage rate than male rats.<sup>27</sup> Nelson, *et al.*,<sup>14</sup> reported that endrin was absorbed on the alkaline phosphatase in the blood of rats; however, Weil and Russel<sup>30</sup> observed that the alkaline phosphatase levels decreased in the blood of rats after eight hours of fasting.

#### PHYSIOLOGICAL MECHANISM

Chlorinated insecticides were studied by Weikel, *et al.*,<sup>29</sup> to determine their effect on the ion movement across the rabbit erythrocyte membrane. They observed that lindane, DDT, dieldrin, methoxychlor and aldrin inhibited the phosphate exchange rate, but DDT produced a selective increase in permeability of the erythrocytes to sodium. Weikel, *et al.*,<sup>29</sup> showed that aldrin caused a loss of phosphate and potassium from the erythrocytes.

Intravenous injection of endrin in anesthetized pigeons, produced a number of changes in telencephalic neuronal function.<sup>19</sup> Dosages of four mg/kg or more caused seizure activity throughout the telencephalon; however, at the two to three mg/kg dosage level, the seizure activity was limited primarily to the ectostriatum by stimulation of the nucleus rotundas, a diencephalic visual projection area. The reticular formation functions tested were affected very little by endrin at any dosage. It was suggested that relatively low levels of endrin in the brain may impair visual function in birds and that this visual impairment could be a major factor underlying the well-known sensitivity of birds toward the chlorinated hydrocarbon pesticides. Revzin<sup>19</sup> observed that the slope of the dose-response curve was very steep since 1.2 mg/kg was an LD<sub>0</sub> whereas 2.0 mg/kg approximated an LD<sub>100</sub> with an LD<sub>50</sub> of 1.5 mg/kg. No evidence of toxicity was observed in the birds four hours after injection of the pesticide. Pentobarbital in suf-

ficient doses completely blocked the electrographic effects of endrin. Given in convulsive doses, endrin had a diphasic action on the effects of ascending reticular activating system stimulation.<sup>19</sup>

Emerson, *et al.*,<sup>4</sup> observed that dogs treated with lethal amounts of endrin followed the usual pattern of symptoms and that their tolerance for barbiturates increased greatly during intoxication, even though the barbiturates decreased the arterial blood pressure. Decreased venous blood pH, increased rectal temperature, hemoconcentration, and leukocyte concentration also occurred. Succinylcholine prevented convulsions in endrin treated dogs completely, and in these dogs arterial pressure always increased initially, but fell subsequently.

Hosein and Proulx<sup>9</sup> preincubated brain tissue with dieldrin and observed a decreased oxygen consumption by the tissue. This inhibition was found to be due to action of dieldrin on various dehydrogenases and cytochromes. Other studies by the same authors showed that dieldrin inhibits anaerobic glycolysis as well as the hydrolysis of acetylcholine by brain acetylcholinesterase and it also increases the activity of nonspecific serum esterases.

Endrin administered to dogs produced cardiovascular alterations such as hypertension and severe bradycardia.<sup>3</sup> The bradycardia appeared to result from a potentiation of acetylcholine and increased vagal activity. This potentiation of acetylcholine resulting in bradycardia could be related to an accumulation due to a fall in pH since cholinesterase activity decreases with decreasing pH. These results have been observed in dogs treated with dieldrin and aldrin.<sup>6</sup>

Decreased glomerular filtration rate and renal blood flow with hypertension and bradycardia were observed by Reins, *et al.*,<sup>17</sup> for one to two hours after acute exposure of dogs to endrin. Moribund animals had significant changes in renal function but these changes were considered secondary to alterations in systemic hemodynamics. These authors indicated that (a) the increased renal resistance was a result of endrin's stimulation of the sympatho-adrenal system and that (b) the renal vascular resistance was due to circulating catecholamines and



to autoregulation within the kidney. Since adrenal gland discharges do not influence systemic hypertension or bradycardia, these responses could have occurred as a result of (a) central nervous system stimulation or (b) the carotid and the cardiac reflexes overriding the humoral effects or (c) the release of acetylcholine or inhibition of acetylcholine esterase.<sup>17</sup>

Endrin caused an increase in the venous return and a corresponding elevation of cardiac output with no change in peripheral resistance.<sup>18</sup> The net effect was a rise in arterial pressure. Evisceration obliterated the increased cardiac inflow after endrin, which indicates that the source of increased venous return was the abdominal visceral vasculature. Dilution by entrance of body water from the extravascular compartment was not considered probable since the hematocrit value tended to increase even in eviscerated dogs when the splenic stores of red blood cells were removed.<sup>3</sup>

A noticeable rise in cardiac inflow coincided with a steady drop in resistance.<sup>8</sup> Left atrial pressure increased strikingly within

15 minutes after treatment with endrin, but the right atrial pressure held steady.<sup>8</sup> In some experiments, the left heart failed. Injection of endrin produced striking increases in oxygen uptake and carbon dioxide production. Acidosis developed within an hour in dogs dosed with endrin and the pH was constantly below 7.0. Endrin appeared to have two actions when it was administered in LD<sub>75</sub> doses: One on the central nervous system and one on the left ventricle.<sup>8</sup> Gowdey, *et al.*,<sup>6</sup> reported that the chlorinated hydrocarbon insecticides exerted their effects through stimulation of the central mechanisms, not peripherally. A prominent feature was the striking rise in venous return after endrin treatment.<sup>8</sup> Convulsions apparently originate from a direct action of endrin on the central nervous system<sup>8</sup> (figure 2).

METABOLISM OF ENDRIN  
RELATED COMPOUNDS

Since no appreciable literature exists concerning the metabolism of endrin, the metabolism of the cyclodienes are reviewed be-

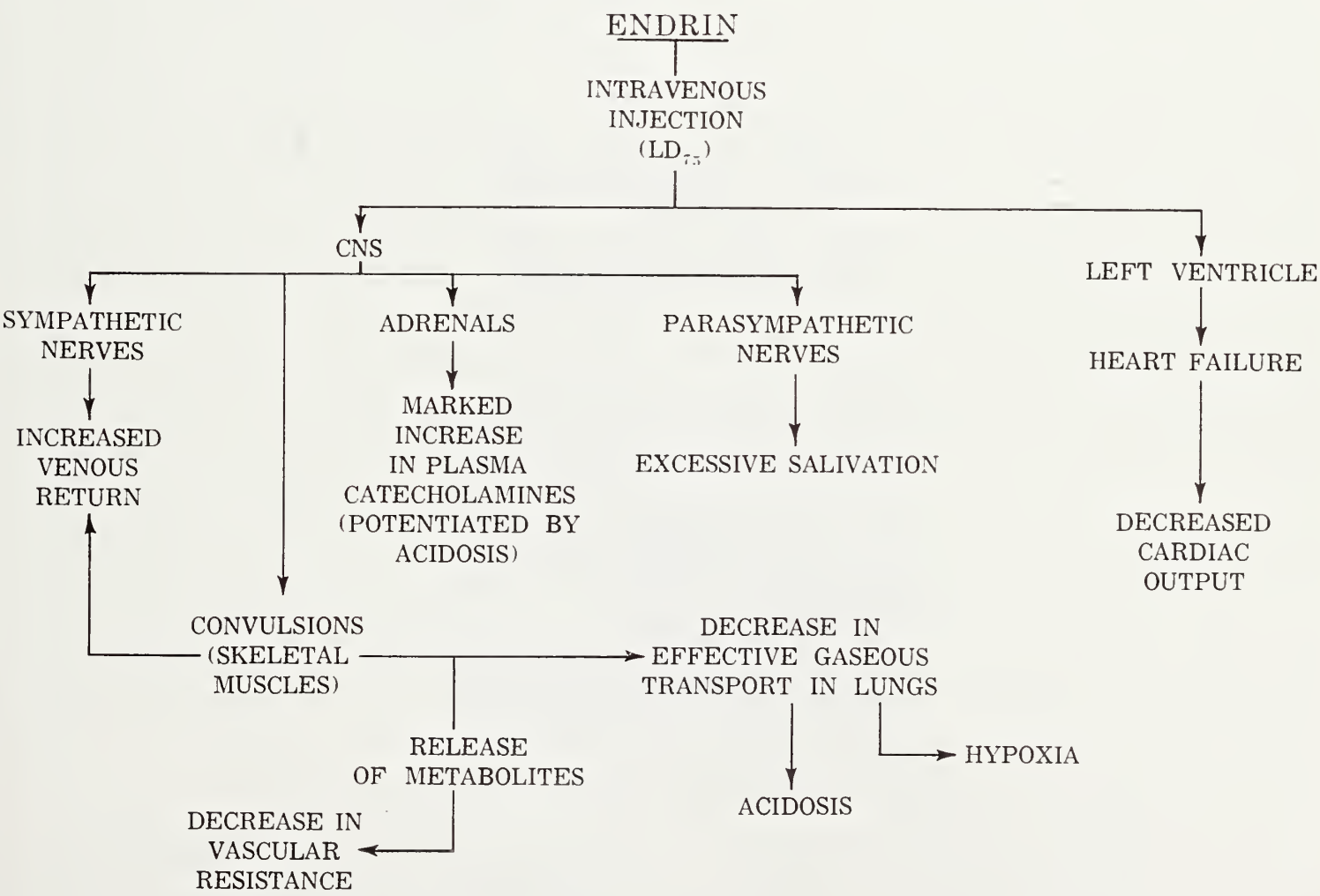


Figure 2. Physiological changes produced by endrin.



cause of their chemical and toxicological similarity to endrin. Toxic manifestations of the cyclodiene insecticides are controlled by their low solubility in water and their high solubility in fat. Dieldrin toxicity is uniform for a particular solvent and concentration, but the quantity finally absorbed depends on the contents of the animal's gastrointestinal tract and its rate of peristalsis.<sup>7</sup> The short time from treatment to onset of symptoms suggests that dieldrin and other cyclodiene insecticides are absorbed from the upper portion of the gastrointestinal tract.<sup>7</sup> Moss and Hathway<sup>13</sup> showed that dieldrin was transported in the blood following absorption on lipoproteins and certain other proteins, and the rate of excretion was influenced by the nutritional state of the rat. If the rat was starved, the excretion rate increased. When the bile duct was cannulated fat absorption was sharply diminished,  $Cl^{36}$  increased in the bile, and the quantity of unchanged dieldrin excreted in the feces was greater than in the normal rat. Under conditioning stimulating fat catabolism, the fat stored dieldrin was released, subsequently converted to more polar metabolites and excreted by the bile duct. Since the animal was capable of metabolizing this new insult of endrin, there must have been either an excess capacity to metabolize dieldrin or the metabolizing enzyme must have been readily stimulated.<sup>7</sup> The principle metabolite, which was more polar than dieldrin, was excreted in the feces and contained 60 per cent of the total radioactivity excreted. Studies on dieldrin metabolism in rats have demonstrated that there are many unidentified metabolites.<sup>7</sup>

Ludwig, *et al.*,<sup>12</sup> in 1964, fed  $C^{14}$  aldrin to male rats daily for three months. At the end of the eighth week the rats daily excreted the amount that had been administered each day, and at the end of the experiment approximately 90 per cent of the active material had been excreted. Twelve weeks after the end of feeding approximately 99.5 per cent of the active material had been excreted. The active material in the feces and urine consisted of aldrin, dieldrin and considerable amounts (up to 75 per cent in the feces and up to 95 per cent in the urine) of a mixture of hydrophilic metabolic products. There

were at least two different products in the feces and urine, with the principle metabolite of each being different; however, the secondary metabolites had the same  $R_f$ -values.

In 1964, Poonawalla and Korte<sup>16</sup> studied the distribution of  $C^{14}$  chlordane by injecting male rats with 27 ug of active material intravenously. Hydrophilic metabolism products in the feces accounted for 75 per cent of the radioactivity, and large amounts of hydrophilic metabolites were detected in the entire alimentary tract and in the kidneys, with unchanged chlordane detected only in the subcutaneous fat.

Rabbits were dosed orally twice weekly with  $C^{14}$  dieldrin for a period of 22 weeks by Korte and Arent.<sup>11</sup> At the end of the feeding period the animals had excreted 42.2 per cent of the administered radioactivity (29.7 per cent in the urine and 12.5 per cent in feces). After 52 weeks, the excretion in the urine had increased to 43.1 per cent, while the radioactivity in the feces had decreased rapidly after termination of dieldrin administration. Six metabolites were isolated from the urine with the principle metabolite which was present in amounts of about 86 per cent, having a melting point of 130 to 131° C. From the structure, Korte and Arent<sup>11</sup> concluded that the epoxy ring system of dieldrin had hydrolyzed *in vivo*, leading to a 6.7-trans-dihydroxy-dihydro-aldrin. The structural formula of this metabolite was one of the two enantiomorphous isomers of the synthetic racemic 1.2.3.4.10.10-hexachloro-6.7-transdihydro-1.4-endo-5.8-exo-dimethano-1.4.4a.5.6.7.8.8a-octahydro-naphthalene. Acute oral toxicity of the 6.7-trans-dihydroxy-dihydro-aldrin in mice ( $LD_{50}$ -1250 mg/kg) was less than dieldrin. The metabolite was injected into rats and within three days 82.2 per cent of the radio-activity was found in the excreta, 84 per cent as unchanged trans-dihydroxy-dihydro-aldrin and 16 per cent of a more hydrophilic compound that was identical to one metabolite found in dieldrin metabolism studies.<sup>11</sup> □

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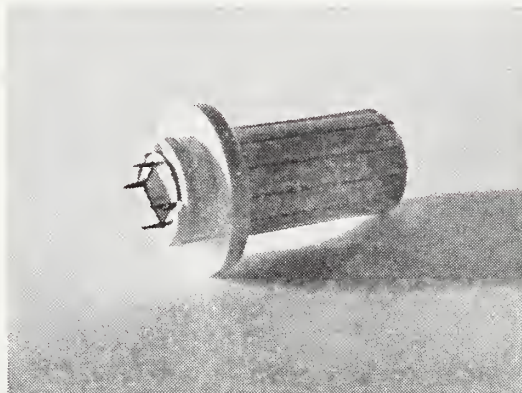


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# Books As Clinical Tools

## CLINICAL REFERENCES IN NEONATOLOGY

ARMOND H. START, M.D.

The past few years have produced remarkable changes in the clinical management of premature and newborn infants. It is no longer acceptable to treat the respiratory distress syndrome with watchful waiting. A newborn infant with seizures must be evaluated for possible hypoglycemia. Septicemia must be recognized and treated vigorously with appropriate antibiotics. It is essential for the physician caring for the premature and newborn infant to know what to do and where to go to find information regarding the problems presented by this group of patients. The correctness of diagnosis and treatment is critical when dealing with the neonate who is profoundly influenced by developmental changes.

The "bible" of pediatric practice remains *Nelson's Textbook of Pediatrics*.<sup>1</sup> Although more detailed information may be obtained from other sources, this book is a fundamental and general reference for disorders of children including the newly born. *Physiology of the Newborn*<sup>2</sup> by Smith remains the standard reference for fundamental aspects of fetal and neonatal life. Another excellent general reference book on neonatology is Schaffer's *Diseases of the Newborn*.<sup>3</sup>

*The Premature Infant*,<sup>4</sup> originally written by Dunham and now edited by Silverman, is an excellent reference for all aspects of the premature infant and his disorders.

Hematological problems are superbly covered in Oski and Naiman's *Hematologic Problems in the Newborn*.<sup>5</sup> Advances in the understanding and treatment of the various enzymatic hematologic deficiencies and of erythroblastosis fetalis are well covered.

From the Department of Pediatrics and the Children's Memorial Hospital, University of Oklahoma Medical Center, Oklahoma City, Oklahoma.

One of a series sponsored by the Department of Continuing Education, University of Oklahoma Medical Center.

The problems of hypoglycemia and disorders of carbohydrate metabolism are well covered in *Disorders of Carbohydrate Metabolism in Infancy*<sup>6</sup> by Cornblath and Schwartz.

The many advances in therapy of neonatal diseases are outlined well in Gellis and Kagan's *Current Pediatric Therapy*.<sup>7</sup> Treatment of the respiratory distress syndrome and the use of newer antibiotics are especially helpful to the practicing physician.

The best current reference on respiratory problems in the neonatal period is Avery's *The Lung and its Disorders in the Newborn Infant*.<sup>8</sup>

A further reduction in neonatal deaths will require constant attention to advances in the treatment of various disorders peculiar to the premature and newborn infant. The current and most up-to-date reference material has been presented, and hopefully new approaches and further reduction in neonatal morbidity and mortality will occur as a result of reviewing the available information. □

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## RECENT PUBLICATIONS

The *Journal* welcomes the opportunity to list current publications by any Oklahoma physician.

Persistent Hyperplastic Primary Vitreous. T. E. Acers and T. O. Coston. *Am. J. of Ophthalmology*, 64(4): 1967.

Motor Nerve Conduction Velocities in Healthy Young East Africans. R. E. Thies, J. R. Billingham, and H. D. Richardson. *J. Appl. Physiol.* 23: 321-323, 1967.

Avulsion of the Upper Ureter Due to Blunt Trauma. D. B. Halverstadt and E. E. Fraley. *British J. of Urology*, XXXIX(5): 588, 1967. □



## What Do You Know About Ventricular Septal Defect?

JOHN D. KYRIACOPOULOS, M.D., F.A.C.C.\*  
L. L. CONRAD, M.D.\*\*

1. Ventricular septal defect (VSD) refers to an opening in the ventricular septum that leads to communication between the systemic and pulmonary circuits. It is the most common congenital heart disease and it occurs either as an isolated lesion or combined with other cardiac anomalies. The defect may appear in any of the four septa that form the ventricular septum which develops:

- a. Between the third and fifth week.
- b. Between the fifth and seventh week of embryo life.

If your answer is (a) go to No. 4; if your answer is (b) go to No. 6.

2. You got here by error. In this type of test, you do not follow the numerical order. You go where the answer sends you.

3. In the presence of a VSD is it true that the changes in the pulmonary arteries depend upon the size of the defect?

If your answer is yes, go to No. 7.

If your answer is no, go to No. 5.

4. Wrong. Try the other answer.

5. Try again.

6. Correct. The ventricular septum develops between the fifth and seventh week of the embryo life from the union of the bulbar septum, the muscular (sinus) septum, the membranous (retrocristal) septum, and the atrioventricular septum. Thus, anatomically and embryologically there are four types of defect: Bulbar, muscular, membranous, and atrioventricular.

Now go to No. 8.

7. Correct. In small VSD the pulmonary flow is slightly increased, the pressure in the pulmonary artery is normal and maturation of the pulmonary arteries proceeds in a normal way. The normally hypertrophied small muscular arteries regress rapidly in the first year and gradually during childhood to the thin-walled pulmonary arteries characteristic of adults. Big VSD are accompanied by large flows and increase pressure. As a result, maturation of the fetal type pulmonary arteries may be arrested or retarded or initially it may proceed in a normal fashion. Eventually, the small pulmonary arteries, under the continuous increased flow and pressure, undergo characteristic changes which include hypertrophy of the media and proliferation of the intima with or without fibrosis that ultimately leads to obstruction.

From the Department of Medicine, University of Oklahoma Medical Center and Medical Service, Veterans Administration Hospital, Oklahoma City, Oklahoma.

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\*\*Associate Professor of Medicine, University of Oklahoma Medical School, Oklahoma City, Oklahoma; Chief, Cardiovascular Disease Section, VA Hospital, Oklahoma City, Oklahoma.



Now go to No. 11.

8. The most common type of ventricular septal defect is:

- a. Membranous. (No. 10)
- b. All other types together. (No. 12)

9. Correct. In small VSD (area less than  $1.0 \text{ cm}^2$ ) the magnitude of left to right shunt is determined chiefly by the size of the defect. Here the ventricular septum functions as an effective although incomplete blood barrier and resistance to flow through the small opening is great. The left to right shunt is minimal (hence, the step-up in  $\text{O}_2$  saturation of RV blood minimal and inconclusive) and ceases before completion of systole due to closure of the defect. The pressure in the right ventricle and pulmonary artery is normal. When the defect is large, the resistance to flow through it is zero, and the magnitude of the shunt is determined by the pulmonary resistance. If the pulmonary resistance is low or normal, the left to right shunt is large, ( $\text{O}_2$  saturation of RV blood high) it occurs through systole and early diastole and the pressure in the right ventricle and pulmonary artery may be normal (30 per cent) or elevated (kinetic hypertension). In very large VSD the  $\text{O}_2$  saturation in the two ventricles is identical (functionally single ventricle). As changes in the pulmonary arteries develop, the magnitude of the shunt varies directly with the difference in resistance between the systemic and pulmonary circuits. Finally, when the pulmonary resistance equals or exceeds the systemic, the shunt is bidirectional or reversed (Eisenmenger Syndrome).

Now go to No. 13.

10. Correct. Seventy per cent of all ventricular septal defects are of the membranous type (isolated VSD, tetralogy of Fallot and transposition of the great vessels). Twelve per cent are of the muscular type either single or multiple and eight per cent each of the bulbar type (isolated, Taussing-Bing complex, truncus arteriosus) and A-V canal region. A combination exists in two per cent.

Now proceed to No. 3.

11. In VSD, the factors that determine the magnitude and direction of the shunt are:

a. The area of the defect and the pulmonary resistance. (No. 9)

b. The location of the defect in the ventricular septum and the area of the pulmonary valve. (No. 14)

12. Wrong. Only 28 per cent of all VSD are of the muscular, bulbar, and A-V canal types. Choose the other answer.

13. The clinical features are determined by the degree of pulmonary hypertension present. If the shunt is large but appreciable pulmonary hypertension is not present you would find:

a. Right ventricular hypertrophy. (No. 16)

b. Left ventricular hypertrophy. (No. 18)

14. Wrong. Try the other answer.

15. The murmur of a ventricular septal defect not complicated by pulmonary hypertension is:

a. Pansystolic. (No. 20)

b. Early systolic. (No. 17)

16. Wrong. Try the other answer.

17. If the murmur is an early systolic murmur, a small defect usually in the muscular portion of the septum should be considered.

Now go to No. 20.

18. Correct. In ventricular septal defect not complicated by pulmonary hypertension all blood entering the pulmonary artery returns to the left atrium and left ventricle. Hence, these chambers enlarge. The left ventricle handles its usual volume of pulmonary venous return plus that volume shunted into the pulmonary artery so that left ventricular hypertrophy results. Physical and electrocardiographic signs of left ventricular hypertrophy are noted. The left atrium and its appendage will appear somewhat enlarged on roentgenograms.

Now go to No. 15.

19. Examination of the chest roentgenogram is helpful in evaluating the physiologic state of the pulmonary vasculature. In Eisenmenger's syndrome the hilar arterial shadows are enlarged and the lung fields in general are radiotranslucent due to obliteration of the lumina of midzone vessels. In VSD uncomplicated by pulmonary hypertension the findings are:



a. Enlarged hilar vessels with dilated midzone vessels and evidence of enlarged pulmonary veins. (No. 21)

b. Enlarged hilar and midzonal vessels without pulmonary venous shadows. (No. 25)

20. Correct. The typical murmur of VSD is pansystolic and frequently is accompanied by a thrill. When the left to right shunt is large, the second sound is widely split but varies normally with respiration. An ejection murmur of functional pulmonary stenosis and an early mid-diastolic rumble of functional mitral stenosis may also be present. An accentuated third heart sound (VG) is heard frequently. When severe pulmonary hypertension intervenes, the pansystolic murmur diminishes in intensity and an early diastolic murmur of pulmonary insufficiency appears. The pulmonary component of the second sound becomes loud and an ejection sound and an atrial gallop may be present.

Now go to No. 19.

21. Correct. The typical roentgenographic changes show both increased pulmonary arterial and venous markings with enlarged midzone vessels ("pulmonary plethora").

Now go to No. 23.

22. Only a small number of children with a large ventricular septal defect develop the syndrome during early childhood. Studies at the Toronto Hospital for Sick Children showed that only ten per cent of their cases satisfy the criteria for Eisenmenger's syndrome and these were children two years of age or older. Another five per cent have large flows with very low pulmonary resistance and usually die of congestive heart failure during the first year.

Now try No. 27.

23. Eisenmenger's syndrome is defined as pulmonary hypertension at systemic levels due to high pulmonary vascular resistance leading to reversal of the shunt of bidirectional shunt through a large ventricular septal defect (hence, cyanosis) and it occurs most frequently:

a. In early childhood. (No. 22)

b. In the late teens to early twenties. (No. 27)

24. There is a discrepancy between the incidence of VSD at birth and its prevalence in school children. This is because:

a. The majority of children with VSD die in the preschool age. (No. 28)

b. Closure of the defect is frequent. (No. 30)

25. Wrong. Pulmonary venous shadows impart a "shaggy" or "lobulated" appearance to the hilum. The veins, as well as the arteries, must enlarge to accommodate the increased pulmonary flow.

Now go to No. 21.

26. Now that you are an expert in VSD you would advise surgery:

a. In all patients with this abnormality. (No. 29)

b. Only in a selective group. (No. 31)

27. Correct. Although the response of the pulmonary arteries to increased flow and pressure in large VSD (2.0 cm. or greater in diameter) begins early in life, the full blown picture of Eisenmenger's syndrome usually develops in the late teens or early twenties. Even in those defects with low flows and high resistance early in life, a decline in the pulmonary resistance can be demonstrated by the third to fourth year. In addition to high flow and pressure serving as stimuli to the pulmonary artery responses, other factors yet undefined contribute to the development of high pulmonary resistance leading to Eisenmenger's syndrome. These children are referred to as "hyperreactors."

Now go to No. 24.

28. Wrong. Try the other answer.

29. Wrong.

30. Correct. The estimated, minimal incidence of VSD at birth is 2/1,000 live births. The death incidence due to VSD under the age of five years is approximately 11 per cent or 0.22/1,000 births. The incidence of VSD at school age is found to be only 0.9/1,000. This 0.9/1,000 difference may be due to spontaneous closure of the defect. Thus, 45 per cent of all children born with VSD probably close their defect before the age of five years, and this rate must be higher if the prevalence of VSD at birth is greater. The evidence supporting this view is provided by Hoffman and Rudolph who observed spontaneous closure in 38 per cent of their cases; this occurred during the first year



of life. Likewise, of 54 cases studied by Disenhouse and Keith, 30 closed spontaneously between the age of two and ten years. It is probable that spontaneous closure may occur after childhood. Spontaneous closure occurs in defects of 1.0 cm. or less in diameter. A larger one occasionally undergoes spontaneous closure, but more frequently it decreases in size.

Now go to No. 26.

31. Correct. Small VSD with a pulmonary to systemic flow ratio of less than 2:1 is probably a benign disorder. Until the operative mortality approaches that of appendectomy, surgical closure should not be undertaken in this group. The argument evolving around the high incidence of bacterial endocarditis in VSD is not justified. Keith, *et al.*, demonstrated that the incidence of bacterial endocarditis in uncomplicated VSD between the age of two to 17 years is about one in 1,000 patient-years. Death from bacterial endocarditis in uncomplicated VSD certainly is no greater than the operative mortality. Furthermore, bacterial endocarditis may develop following surgery.

Ten per cent of the children with large VSD and pulmonary to systemic flow ratio of 2:1 or greater, will develop Eisenmenger's by adolescence. Another 20 per cent will have high pulmonary resistance but not at systemic level and the majority of them will develop Eisenmenger's syndrome in the following ten to 15 years. Hence, 70 per cent will reach adolescence with normal or slightly elevated pulmonary resistance. The fate of these patients is unknown as they continue into adult life. Bedford has shown that

the incidence of pulmonary hypertension in atrial septal defect is 4.8 per cent below the age of 20, 20 per cent between 20 and 40, and 40 per cent over the age of 40. It is logical to assume that the rate of pulmonary hypertension in VSD in the same age group is comparable to that of ASD. Therefore, there is a good reason for operating on all VSD with a left to right shunt of 2:1 or greater. When the pulmonary resistance is low or normal the operative mortality in experienced hands is about one per cent. This increases to three per cent and 25 per cent for moderately elevated and high, but not at systemic level pulmonary resistance respectively. In Eisenmenger's syndrome, surgical mortality reaches a prohibitive figure of up to 80 per cent. Moreover, in those who survive the operation the decline in pulmonary vascular resistance is minimal postoperatively. The optimal time of operation is between two years and adolescence. Children in intractable congestive heart failure during the first two years of life (20 per cent) require surgery. Banding of the pulmonary artery may be preferable to direct closure particularly before the age of six months. □

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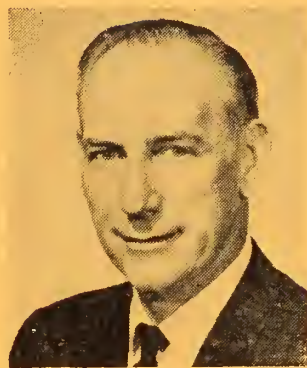
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# Digest of Events

## HOTEL ACCOMMODATIONS

Headquarters for the 62nd Annual Meeting will be the Skirvin Hotel, Oklahoma City, where a large block of rooms has been reserved for members of the Oklahoma State Medical Association. Physicians are requested to make their own reservations by writing directly to the Skirvin Hotel, Broadway at Park Avenue, Oklahoma City, Oklahoma—providing the hotel with dates and times of arrival and departure.

All Annual Meeting business, scientific, social and exhibit activities are scheduled for the Convention Center of the Skirvin Hotel and the meeting rooms of the Skirvin Tower Hotel.

## REGISTRATION

Registration will open Thursday, May 16th, at 11:00 a.m. in the Convention Center located on the second floor of the hotel. The registration tables will be located at the entrance to the exhibit area.

Members of the House of Delegates (including the Board of Trustees) may register at the General Registration Desk beginning at 11:00 a.m. May 16th, and receive special badges upon presentation of their credentials cards. Registration will also be open at 8:00 a.m. on Friday morning, May 17th, immediately preceding the opening session of the House. Portfolios, containing all business items to be acted on, will be distributed at the time of registration.

## BOARD OF TRUSTEES

The OSMA Board of Trustees will conduct its annual business meeting, Thursday afternoon, May 16th. The meeting will convene in the Crystal Room of the hotel at 1:30 p.m. and should adjourn by 5:00 p.m.

## HOUSE OF DELEGATES

The OSMA House of Delegates will conduct two sessions during the 1968 Annual Meeting.

The opening meeting will be held the morning of Friday, May 17th, and the closing session is scheduled for Saturday morning,

May 18th. Both sessions will convene at 8:30 a.m. in Room A of the Skirvin Convention Center and business should be concluded by noon each day.

The opening session will feature the appearance of special guests, introduction of reports and resolutions, nominations of OSMA general officers, AMA delegates and alternates, and Board of Trustees candidates.

Reference committees will conduct open hearings on the business items on Friday afternoon, beginning at 4:00 p.m. All members of the association are invited to attend these meetings and express their opinions.

Reference committees will prepare reports containing recommendations for presentation to the closing session of the House on Saturday morning.

Elections and a special appearance of Russell B. Roth, M.D., Vice-Speaker of the AMA House of Delegates, will be scheduled for the Saturday session.

At the conclusion of the Friday and Saturday morning sessions, all delegates are invited to attend the free "picnic luncheons" to be held in the hotel's Continental and Venetian Rooms each day at noon.

Coffee will be available all day each day at a special coffee bar in the exhibit area.

## SCIENTIFIC SESSIONS

The scientific portion of the annual meeting program will be held Thursday afternoon and all day Friday and Saturday, May 16th-18th.

Twelve specialty societies are co-sponsoring section meetings in their respective fields of interest. All section meetings are open, however, to the entire association membership. All meetings will be held in the Convention Center area.

A detailed program appears on pages 185 to 190 of this Journal.

Thursday afternoon, May 16th, the section on pathology and a special session of general interest, the "Government Fee Conference," will meet. Both meetings will convene at 1:30 p.m.

Friday morning, May 17th, the sections on eye, ear, nose and throat, general practice, and psychiatry will convene at 8:30 a.m.



General surgery, internal medicine, pediatrics, and radiology will meet at 1:30 p.m. Friday afternoon.

Four sections will meet on Saturday morning, May 18th. The sections, on dermatology, obstetrics and gynecology, orthopedic surgery and cardiovascular disease will convene at 8:30 a.m.

Scheduled for Saturday afternoon at 1:30 p.m. is another special session of interest to all Oklahoma physicians. The "Forum on Medicine and Government" will be held in Rooms A and B of the Convention Center.

### SPECIAL SESSIONS

Two special sessions of interest to all Oklahoma physicians will highlight the 62nd Annual Meeting. The "Government Fee Conference" will be held Thursday afternoon, May 16th, in Section A of the hotel's Convention Center. This four-hour meeting is designed to give physicians and government representatives an opportunity to discuss various governmental health programs. Thomas G. Bell, Ph.D., of the Social Security Administration will speak on "Governmental Attitudes Toward Medical Charges." OSMA President-Elect Scott Hendren, M.D., will handle the subject "Medical Attitudes Toward Governmental Health Programs."

One section of the conference will be used to explain the mechanisms for determining *usual, customary, and reasonable* fees by Medicare, Medicaid and the Champus programs. Each such program will be discussed by its Oklahoma carrier.

The "Forum on Medicine and Government" is scheduled for Saturday afternoon, May 18th, and is a teaching program on the basic instrumentalities of state government. It will feature a comparative analysis of jurisdictions and operations of the executive, judicial and legislative branches of government.

Featured speakers during the forum include Attorney General G. T. Blankenship, Senate President Pro Tempore Clem McSpadden, House of Representatives Speaker Rex Privett, Legislative Council Director Jack Rhodes, Supreme Court Vice Justice Pat Irvin, District Court Judge Harold Theus, and State Finance Director Carl G. Williams.

Members of the audience are urged and encouraged to ask questions during both of these special sessions.

### PICNIC LUNCHEONS

The proverbial "free" lunch will become a reality on Friday and Saturday when Oklahoma Blue Shield and the Aetna Medicare Claims Office sponsor the "picnic luncheons" for all comers.

The bill of fare will be a picnic style spread of hot pastrami and corned beef sandwiches, assorted relishes, draught beer and soft drinks. The luncheons will be served in an informal atmosphere in the hotel's Continental and Venetian Rooms.

Your name badge will be your admission ticket.

### CHAMPAGNE HOUR

Thursday evening's social event will be a free "Champagne Hour" to be held in the Skirvin Tower's Persian Room.

Hot and cold hors d'oeuvres will be served to complement Paul Masson Champagne. Physicians are invited to bring their wives and guests to this delightful affair and then enjoy dinner at one of Oklahoma City's fine restaurants.

The party is being sponsored by the C. L. Frates Company and Wilson and Wilson insurance agencies. It will start at 6:30 p.m. and last until 8:00 p.m.

### GALA GASLIGHT PARTY

Guys and gals from Chicago's famous Gaslight Club will be featured entertainment for the gala Gaslight Party to be held from 8:00 p.m. until midnight, Friday evening, May 17th. The Skirvin Hotel's Imperial Ballroom will rock with the fire and flash of the roaring twenties' Dixieland music.

Some outstanding moments of the party will occur when members of the audience are brought to the stage and taught by the girls to do the Charleston and twist in the true Gaslight fashion.

Free beer and pretzels will be the bill of fare during the four hours of fun and setups will be provided. During the evening two \$100 lifetime memberships in the International Gaslight Club will be presented as door prizes to lucky physicians.



Admission to the party will be \$7.50 per person and will include draught beer, setups and party favors.

#### **PRESIDENT'S INAUGURAL DINNER-DANCE**

On Saturday night, May 18th, the annual President's Inaugural Dinner-Dance will be held in the Persian Room of the Skirvin Tower Hotel at 7:30 p.m. A poolside cocktail party will precede the banquet at 6:30 p.m. around the hotel's Sun Suite Pool.

Scott Hendren, M.D., an Oklahoma City internist, will succeed Maxwell A. Johnson, M.D., Tulsa, as President of the Oklahoma State Medical Association.

The dinner-dance is scheduled to last until 12:30 a.m. and will be B.Y.O.L. A special gourmet menu is being prepared by the hotel for this occasion.

Following the dinner everyone is invited to dance to the music of Al Good's Orchestra. The tickets for the Inaugural Dinner-Dance are \$10 per person. The price includes the cocktail party, the gourmet dinner and the dance.

Tickets for both the gala Gaslight Party and the Inaugural Dinner-Dance should be ordered in advance from the OSMA Executive Office, P.O. Box 18696, Oklahoma City, Oklahoma 73118.

Don't miss the social highlights of the OSMA year!

#### **EXHIBITS**

Sixty-five technical and fourteen scientific or institutional exhibits will be set up in the Skirvin Hotel Assembly Center for the Annual Meeting. All exhibits may be seen from 8:30 a.m. until 5:00 p.m., May 17th-18th and from noon until 5:00 p.m. on May 16th. Entrance to the meeting rooms will be through the exhibit area.

#### **PAST-PRESIDENTS' BREAKFAST**

The traditional breakfast for former presidents of the Oklahoma State Medical Association will be held on Saturday morning, May 18th, at 7:30 a.m. in the Executive Suite of the Skirvin Hotel.

#### **AUXILIARY MEETINGS**

The Woman's Auxiliary to the OSMA will meet May 16th-18th in the Skirvin Hotel. A full program of events is contained on pages 196 to 199 of this Journal.

#### **OSMA GOLF TOURNAMENT**

Oklahoma City's Lincoln Park Golf Course, 4001 N.E. Grand Boulevard, will be the site of the annual OSMA Golf Tournament on Friday, May 17th. Participants may tee off at any time on that date. No formal lunches or dinners are planned but food and drink are available in the course Pro Shop.

Trophies for winners will be presented at the President's Inaugural Dinner-Dance on Saturday night, May 18th, in the Persian Room of the hotel. At that time the traveling low gross winner trophy will be presented. The winner will also receive a permanent trophy for his collection.

#### **TENNIS TOURNAMENT**

For the first time in several years there will be an OSMA Tennis Tournament. Play will begin promptly at 1:00 p.m. on Friday, May 17th, at the tennis courts in Memorial Park, 35th and Classen, Oklahoma City. Entries may be sent to Stanley R. McCampbell, M.D., 1211 North Shartel, Oklahoma City (telephone CE 6-1295). Since it will not be possible to purchase tennis balls at the park, it is requested that contestants bring a supply with them. Trophies will be presented to winners of doubles and singles at the President's Inaugural Dinner-Dance on Saturday evening, May 18th. ☐

#### **TULSA NEIGHBORHOOD HEALTH CENTER PHYSICIANS NEEDED**

The Tulsa City-County Health Department and Tulsa County Medical Society's Neighborhood Health Center soon to be opened in North Tulsa offers exciting opportunities in a group practice setting for providing high quality personalized family care.

Positions available now for: FAMILY PHYSICIANS — INTERNISTS — PEDIATRICIANS — OB.-GYN. — OTHERS. Salaries competitive — Opportunities for continuing education — Liberal vacation, insurance, and retirement programs.

Apply, submitting training and experience to: George W. Prothro, M.D., Director, Tulsa City-County Health Department, 4616 East Fifteenth Street, Tulsa, Oklahoma 74112.



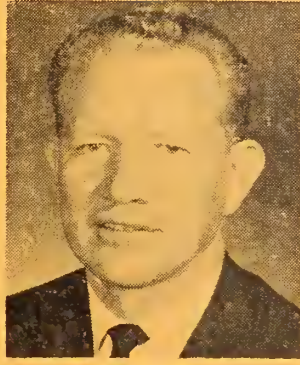
# Distinguished Guest Speakers



Robert Abernathy, M.D.  
Little Rock, Arkansas



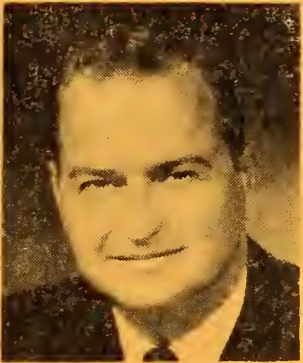
Gov. Dewey Bartlett  
Tulsa, Oklahoma



Thomas G. Bell, Ph.D.  
Baltimore, Maryland



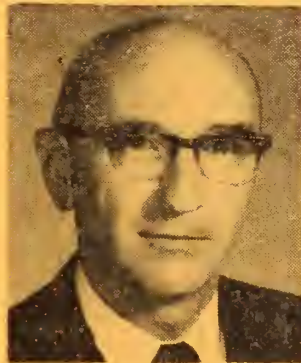
Herbert W. Birch, M.D.  
Atlanta, Georgia



Atty. Gen.  
G. T. Blankenship  
Oklahoma City, Oklahoma



Russell J. Eilers, M.D.  
Kansas City, Kansas



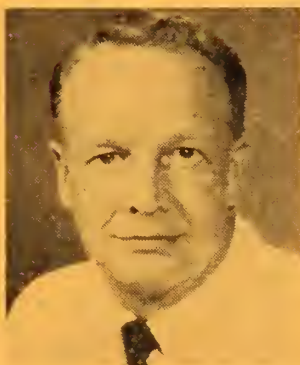
Gilbert H. Fletcher, M.D.  
Houston, Texas



Dale C. Garell, M.D.  
Los Angeles, California



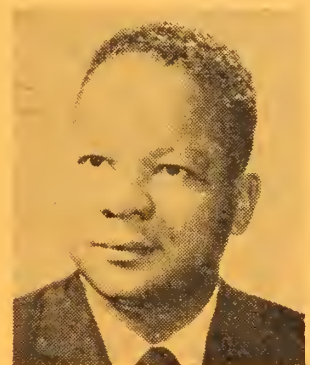
Donald A. Goss, M.D.  
Nashville, Tennessee



E. Richard Harrell, M.D.  
Ann Arbor, Michigan



Vice Chief Justice  
Pat Irwin  
Oklahoma City, Oklahoma



Carroll M. Leevy, M.D.  
Jersey City, New Jersey



Sen. Clem McSpadden  
Claremore, Oklahoma



Arnold Mandell, M.D.  
Los Angeles, California



Lee W. Milford, Jr., M.D.  
Memphis, Tennessee



Dan Morley  
Oklahoma City, Oklahoma

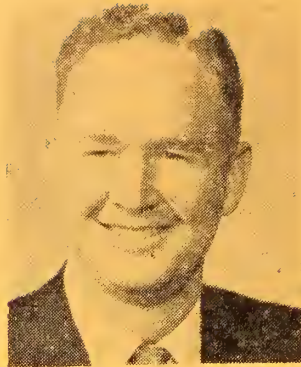




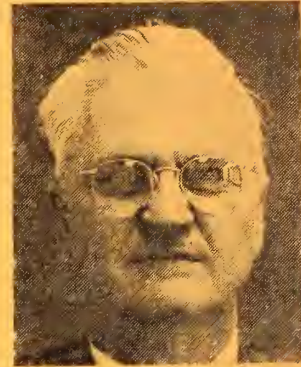
David Paton, M.D.  
Baltimore, Maryland



Irving B. Perlstein, M.D.  
Louisville, Kentucky



Rep. Rex Privett  
Maramec, Oklahoma



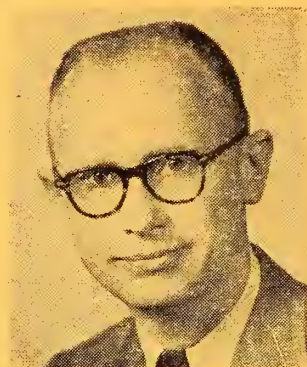
Lloyd E. Rader  
Oklahoma City, Oklahoma



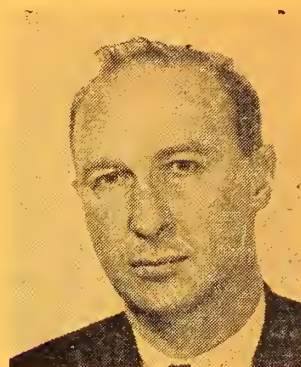
Jack Rhodes  
Oklahoma City, Oklahoma



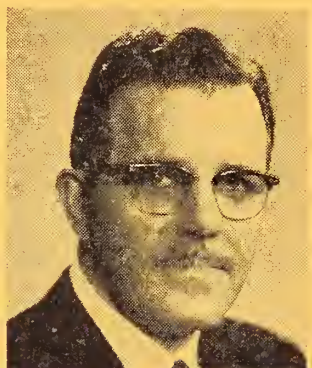
C. Howard Ross, M.D.  
Ann Arbor, Michigan



E. Ide Smith, M.D.  
Kansas City, Missouri



Alan P. Thal, M.D.  
Kansas City, Kansas



Justice Harold C. Theus  
Oklahoma City, Oklahoma



Theodore P. Votteler, M.D.  
Dallas, Texas



Paul F. Wehrle, M.D.  
Los Angeles, California



Carl Williams  
Sulpher, Oklahoma

## ANNUAL MEETING TELEPHONE MESSAGE CENTER

### ATTENTION:

While you are attending the OSMA Annual Meeting, your  
emergency calls may be referred to

**CEntral 2-4164**



# SCIENTIFIC AND EDUCATIONAL PROGRAMS

All Meetings To Be Held On The Second Floor, Skirvin Hotel

## Thursday Afternoon, May 16th

### GOVERNMENT FEE CONFERENCE—ROOM A

Presiding: Rex E. Kenyon, M.D., Oklahoma City

Chairman, OSMA Governmental Relations Committee

(MEDICAL ASSISTANTS AND BUSINESS MANAGERS INVITED)

- 1:30 p.m. GOVERNMENTAL ATTITUDE TOWARD MEDICAL CHARGES  
Thomas G. Bell, Ph.D., *Baltimore, Maryland*, Assistant Bureau Director,  
Division of Intermediary Operations, Bureau of Health Insurance, Social  
Security Administration
- 2:00 p.m. MEDICAL ATTITUDE TOWARD GOVERNMENTAL HEALTH PROGRAMS  
Scott Hendren, M.D., *Oklahoma City*, President-Elect, Oklahoma State Med-  
ical Association
- 2:30 p.m. MECHANISMS FOR DETERMINING USUAL, CUSTOMARY AND REASON-  
ABLE FEES
- MEDICARE  
Dan Morley, *Oklahoma City*, Manager, Medicare Claims Office, Aetna  
Life and Casualty Company
- MEDICAID  
Lloyd E. Rader, *Oklahoma City*, Director, State Department of Public  
Welfare
- CHAMPUS  
W. Dean Hidy, M.D., *Tulsa*, Medical Advisor, Oklahoma Blue Shield
- 3:30 p.m. Intermission (Visit Exhibits)
- 3:45 p.m. OSMA MEDICAL INSURANCE REVIEW FUNCTION  
Richard E. Carpenter, M.D., *Oklahoma City*, Chairman, Medical Insurance  
Review Committee
- 4:00 p.m. QUESTION AND ANSWER PERIOD—AUDIENCE PARTICIPATION  
Featuring All Speakers As Panelists
- 5:00 p.m. ADJOURNMENT

### PATHOLOGY SECTION—BALINESE ROOM

#### "QUALITY LABORATORY MEDICINE IN THE PHYSICIAN'S OFFICE"

Raymond F. Hain, M.D., Oklahoma City, Presiding

(PHYSICIANS AND MEDICAL TECHNOLOGISTS INVITED)

- 1:30 p.m. WELCOME AND OPENING REMARKS  
Raymond F. Hain, M.D.
- 1:40 p.m. WHY??—"TO KNOW OR NOT TO KNOW"  
Tom S. Gafford, M.D., *Muskogee*
- 2:00 p.m. WHAT??—"CONCEPT OF TOTAL QUALITY CONTROL"  
Russell J. Eilers, M.D., Director of Clinical Laboratories, University of Kan-  
sas Medical Center, and Chairman, Standards Committee of College of  
American Pathologists, *Kansas City, Kansas*
- 2:45 p.m. Intermission (Visit Exhibits)
- 3:05 p.m. HOW??—"A PRACTICAL LABORATORY CONTROL PROGRAM FOR THE  
PHYSICIAN'S OFFICE"  
Dale E. Van Wormer, M.D., *Tulsa*
- 3:30 p.m. Questions and Answers
- 4:00 p.m. PROGRAM SUMMARY AND ADJOURNMENT  
Raymond F. Hain, M.D.

## Friday Morning, May 17th

### EENT SECTION—CRYSTAL ROOM

Dick Lowry, M.D., Oklahoma City, Presiding

- 8:30 a.m. PART I: RECENT ADVANCES IN CORNEAL SURGERY

David Paton, M.D., Associate Professor of Ophthalmology, The Wilmer In-  
stitute, Johns Hopkins University, *Baltimore, Maryland*



- 9:15 a.m. **PART II: RECENT ADVANCES IN CORNEAL SURGERY**  
David Paton, M.D.
- 10:00 a.m. Intermission (Visit Exhibits and Coffee Bar)
- 10:30 a.m. **THE MEDICAL AND SURGICAL TREATMENT OF SEROUS OTITIS MEDIA**  
Roger E. Wehrs, M.D., Instructor in Otolaryngology, University of Oklahoma Medical Center, *Tulsa*
- 11:15 a.m. **EXPERIENCES WITH HOMOGRAFT OSSICLES**  
Roger E. Wehrs, M.D.
- 12:00 p.m. **ADJOURNMENT TO FREE LUNCHEON**  
Continental and Venetian Rooms—14th Floor—Skirvin

### **GENERAL PRACTICE SESSION—ROOM B**

#### **Part I**

**Arnold G. Nelson, M.D., Midwest City, Presiding**

- 8:30 a.m. **IS GERIATRICS POUNDING AT YOUR DOOR?**  
C. Howard Ross, M.D., Past-President, Michigan Academy of General Practice, *Ann Arbor, Michigan*
- 9:25 a.m. **THE LONG TERM MANAGEMENT OF OBESITY, A CHRONIC DISEASE**  
Irving B. Perlstein, M.D., Instructor in Medicine, University of Louisville School of Medicine, *Louisville, Kentucky*
- 10:15 a.m. Intermission (Visit Exhibits and Coffee Bar)

#### **Part II**

**P. D. Casper, M.D., Oklahoma City, Presiding**

- 10:45 a.m. **GRANNY'S HERBS AND THE WITCH DOCTOR**  
C. Howard Ross, M.D.
- 11:20 a.m. **WHAT'S YOUR QUESTION ABOUT OBESITY?**  
Irving B. Perlstein, M.D.
- 12:00 p.m. **ADJOURNMENT TO FREE LUNCHEON**  
Continental and Venetian Rooms—14th Floor—Skirvin

### **PSYCHIATRY SECTION—REGENCY ROOM "PSYCHOACTIVE DRUGS IN MEDICINE"**

**Jay T. Shurley, M.D., Oklahoma City, Presiding**

- 8:30 a.m. **CLINICAL USE OF PHENOTHIAZINES**  
K. D. Charalampous, M.D., Associate Professor of Psychiatry, University of Oklahoma Medical Center, *Oklahoma City*
- 9:15 a.m. **DRUGS AND SLEEP**  
Boyd K. Lester, M.D., Associate Professor of Psychiatry, University of Oklahoma Medical Center, *Oklahoma City*
- 10:00 a.m. Intermission (Visit Exhibits and Coffee Bar)
- 10:30 a.m. **THE SUBCULTURES OF HALLUCINOGEN USERS**  
L. J. West, M.D., Professor and Head, Department of Psychiatry, Neurology and Behavioral Sciences, University of Oklahoma Medical Center, *Oklahoma City*
- 11:15 a.m. **THE PSYCHOPHARMACOLOGY OF EVERYDAY LIFE**  
Arnold Mandell, M.D., Associate Professor of Psychiatry, University of California at *Los Angeles*
- 12:00 p.m. **ADJOURNMENT TO FREE LUNCHEON**  
Continental and Venetian Rooms—14th Floor—Skirvin

## **Friday Afternoon, May 17th**

### **GENERAL SURGERY SECTION—ROOM A "PROGRESS IN PEDIATRIC SURGERY"**

#### **Part I**

**G. Rainey Williams, M.D., Oklahoma City, Presiding**

- 1:30 p.m. **TRAUMA IN CHILDREN**  
E. Ide Smith, M.D., Surgeon-in-Chief, Children's Mercy Hospital, *Kansas City, Missouri*



- 2:00 p.m. MANAGEMENT OF PORTAL HYPERTENSION IN CHILDREN  
Theodore P. Votteler, M.D., Director of General Surgery Service, Children's Medical Center, *Dallas, Texas*
- 2:30 p.m. POLYPOID LESIONS OF THE INTESTINAL TRACT IN CHILDREN  
John W. Richardson, Jr., M.D., Clinical Assistant in Surgery, University of Oklahoma Medical Center, *Oklahoma City*
- 3:00 p.m. Intermission (Visit Exhibits and Coffee Bar)

## Part II

**Benjamin H. Gaston, M.D., Muskogee, Presiding**

- 3:30 p.m. CHOICE OF SURGICAL PROCEDURES IN HIRSCHSPRUNG'S DISEASE  
Theodore P. Votteler, M.D.
- 4:00 p.m. MANAGEMENT OF IMPERFORATE ANUS AND ITS LATE COMPLICATIONS  
E. Ide Smith, M.D.
- 4:30 p.m. SURGERY OF THE SNOWMAN  
G. Rainey Williams, M.D., Professor of Surgery, University of Oklahoma Medical Center, *Oklahoma City*
- 5:00 p.m. ADJOURNMENT

## INTERNAL MEDICINE SECTION—ROOM B

**Bartis M. Kent, M.D., Muskogee, Presiding**

- 1:30 p.m. PULMONARY INFECTIONS AND THEIR MANAGEMENT  
Robert Abernathy, M.D., Professor and Head, Department of Internal Medicine, University of Arkansas School of Medicine, *Little Rock, Arkansas*
- 2:30 p.m. Questions and Answers
- 3:00 p.m. Intermission (Visit Exhibits and Coffee Bar)
- 3:30 p.m. TREATMENT AND REVERSIBILITY OF CHRONIC LIVER DISEASE  
Carroll M. Leevy, M.D., Professor and Director, Division of Hepatic Metabolism and Nutrition, New Jersey College of Medicine and Dentistry, *Jersey City, New Jersey*
- 4:30 p.m. Questions and Answers
- 5:00 p.m. ADJOURNMENT

## PEDIATRICS SECTION—BALINESE ROOM

**Jake Jones, Jr., M.D., Shawnee, Presiding**

### Part I

- 1:30 p.m. THE CURRENT STATUS OF IMMUNIZING AGENTS FOR CHILDREN AND ADULTS  
Paul F. Wehrle, M.D., Chief Physician, Children's Division, Pediatrics and Communicable Disease Services, Los Angeles County General Hospital, *Los Angeles, California*
- 2:00 p.m. Questions and Answers
- 2:15 p.m. PRESENT STATUS OF ANTIBIOTIC THERAPY  
Paul F. Wehrle, M.D.
- 2:45 p.m. Questions and Answers
- 3:00 p.m. Intermission (Visit Exhibits and Coffee Bar)

### Part II

- 3:15 p.m. PRACTICAL APPROACHES TO THE MANAGEMENT OF THE ADOLESCENT AGE PATIENT  
(Sex education of the adolescent and common menstrual problems)  
Dale C. Garell, M.D., Director, Division of Adolescent Medicine, Children's Hospital of Los Angeles, *Los Angeles, California*
- 4:15 p.m. Questions and Answers
- 4:45 p.m. ADJOURNMENT

## RADIOLOGY SECTION—CRYSTAL ROOM

**Robert Sukman, M.D., Oklahoma City, Presiding**

- 1:30 p.m. RADIOTHERAPY OF THE HEAD AND NECK  
Gilbert H. Fletcher, M.D., Professor and Head, Department of Radiotherapy, M. D. Anderson Hospital and Tumor Institute, *Houston, Texas*



- 2:30 p.m. Questions and Answers  
 3:00 p.m. Intermission (Visit Exhibits and Coffee Bar)  
 3:30 p.m. **RADIOTHERAPY OF THE BREAST**  
           Gilbert H. Fletcher, M.D.  
 4:30 p.m. Questions and Answers  
 5:00 p.m. **ADJOURNMENT**

## Saturday Morning, May 18th

### **DERMATOLOGY SECTION—REGENCY ROOM** **"ADVANCES IN DERMATOLOGY"**

**Mark Allen Everett, M.D., Oklahoma City, Presiding**

- 9:00 a.m. **FORTY YEARS OF OKLAHOMA DERMATOLOGY**  
           \*Mark Allen Everett, M.D., Professor and Chairman  
 9:15 a.m. **OPPORTUNISTIC FUNGUS INFECTIONS**  
           \*\*E. Richard Harrell, M.D., Professor and Chairman, Department of Dermatology, University of Michigan Medical School, *Ann Arbor Michigan*  
 9:45 a.m. **ADVANCES IN THE BIOLOGIC SCIENCES IN RELATION TO CLINICAL DERMATOLOGY**  
           \*Robert L. Olson, M.D., Assistant Professor  
 10:15 a.m. Intermission (Visit Exhibits and Coffee Bar)  
 10:45 a.m. **RECENT DEVELOPMENTS IN BIOCHEMISTRY AND PHYSIOLOGY OF THE AGING SKIN**  
           \*Dennis A. Weigand, M.D., Instructor  
 11:15 a.m. **WHAT'S NEW IN DERMATOLOGICAL THERAPY**  
           *Panel*  
           \*Robert J. Morgan, M.D., Moderator, Clinical Professor and Vice Chairman  
           \*\*E. Richard Harrell, M.D., Guest Speaker  
           \*Hervey A. Foerster, M.D., Clinical Professor  
           \*Lloyd A. Owens, M.D., Associate Clinical Professor  
           \*O'Tar T. Norwood, M.D., Clinical Instructor  
           \*Dwane B. Minor, M.D., Visiting Lecturer  
           \*Members of the Department of Dermatology, University of Oklahoma Medical Center  
           \*\*Sponsored by the Department of Dermatology, University of Oklahoma Medical Center  
 12:00 p.m. **ADJOURNMENT TO FREE LUNCHEON**  
           Continental and Venetian Rooms—14th Floor—Skirvin

### **OBSTETRICS AND GYNECOLOGY SECTION—BALINESE ROOM** **"SECOND THOUGHTS ON CONCEPTION CONTROL MEASURES"**

**Sterling T. Crawford, M.D., Oklahoma City, Presiding**

- 8:30 a.m. **THE PILL**  
           Donald A. Goss, M.D., Professor and Chairman, Department of Obstetrics and Gynecology, Vanderbilt University School of Medicine, *Nashville, Tennessee*  
 9:15 a.m. **THE I.U.D.**  
           Herbert W. Birch, M.D., Assistant Professor, Department of Obstetrics and Gynecology, Emory University School of Medicine, *Atlanta, Georgia*  
 10:00 a.m. Intermission (Visit Exhibits and Coffee Bar)  
 10:30 a.m. **MEDICAL CONSIDERATIONS**  
           Robert H. Furman, M.D., Professor of Research Medicine, University of Oklahoma Medical Center, and Associate Director of Research and Head of Cardiovascular Section, Oklahoma Medical Research Foundation, *Oklahoma City*  
 11:15 a.m. **ROUNDTABLE DISCUSSION**  
           Donald A. Goss, M.D.  
           Herbert W. Birch, M.D.  
           Robert H. Furman, M.D.  
           James A. Merrill, M.D., Moderator  
           Professor and Chairman, Department of Obstetrics and Gynecology, University of Oklahoma Medical Center, *Oklahoma City*



12:00 p.m. ADJOURNMENT TO FREE LUNCHEON  
Continental and Venetian Rooms—14th Floor—Skirvin

**ORTHOPEDIC SECTION—CRYSTAL ROOM**  
**S. Fulton Tompkins, M.D., Oklahoma City, Presiding**

8:30 a.m. SURGERY ON THE GROWING HAND  
Lee W. Milford, Jr., M.D., Staff Member, Campbell Clinic, and Assistant Professor of Orthopedic Surgery, University of Tennessee School of Medicine, *Memphis, Tennessee*

9:00 a.m. MEDICAL BRINKMANSHIP IN RHEUMATOID ARTHRITIS  
Richard W. Payne, M.D., Assistant Professor of Medicine, University of Oklahoma Medical Center, *Oklahoma City*

9:30 a.m. SURGERY ON THE RHEUMATOID HAND  
Lee W. Milford, Jr., M.D.

10:15 a.m. Intermission (Visit Exhibits and Coffee Bar)

10:45 a.m. SURGERY ON THE RHEUMATOID FOOT  
Stephen Tkach, M.D., Instructor, Department of Orthopedic Surgery, University of Oklahoma Medical Center, *Oklahoma City*

11:15 a.m. PANEL DISCUSSION  
Lee W. Milford, Jr., M.D.  
Richard W. Payne, M.D.  
Stephen Tkach, M.D.  
Wayne B. Lockwood, M.D., Moderator, *Oklahoma City*

12:00 p.m. ADJOURNMENT TO FREE LUNCHEON  
Continental and Venetian Rooms—14th Floor—Skirvin

**CARDIOVASCULAR DISEASE SECTION—ROOM B**  
**Hubert H. Bell, M.D., Oklahoma City, Presiding**

8:30 a.m. MECHANISMS IN SEPTIC SHOCK  
Lerner B. Hinshaw, Ph.D., Professor of Physiology, University of Oklahoma Medical Center, *Oklahoma City*

9:15 a.m. DEFINITION AND CLASSIFICATION OF HUMAN SHOCK  
Alan P. Thal, M.D., Professor of Surgery, University of Kansas Medical Center, *Kansas City, Kansas*  
Questions and Answers

9:45 a.m. CLINICAL AND HEMODYNAMIC MEASUREMENT IN SHOCK  
Alan P. Thal, M.D.

10:15 a.m. Intermission (Visit Exhibits and Coffee Bar)

10:45 a.m. CARE OF THE SHOCK PATIENT  
Alan P. Thal, M.D.

11:15 a.m. PANEL DISCUSSION OF SHOCK  
Lerner B. Hinshaw, Ph.D.  
Alan P. Thal, M.D.  
David I. Kraft, M.D., Clinical Assistant Professor of Medicine, University of Oklahoma Medical Center, *Oklahoma City*  
Hubert H. Bell, M.D., *Oklahoma City*  
John M. Kalbfleisch, M.D., Assistant Professor of Medicine, University of Oklahoma Medical Center, *Oklahoma City*

12:00 p.m. ADJOURNMENT TO FREE LUNCHEON  
Continental and Venetian Rooms—14th Floor—Skirvin

## Saturday Afternoon, May 18th

**SECOND OSMA FORUM ON MEDICINE AND GOVERNMENT**  
**Rooms A and B**

**"KNOW YOUR STATE GOVERNMENT"**  
**Presiding: Raymond F. Hain, M.D., Oklahoma City**  
**Chairman, OSMA State Legislative Committee**

1:30 p.m. INVOCATION  
George H. Garrison, M.D., *Oklahoma City*  
Past-President, Oklahoma State Medical Association



#### WELCOME

Maxwell A. Johnson, M.D., *Tulsa*  
President, Oklahoma State Medical Association

#### 1:40 p.m. THE EXECUTIVE BRANCH—PANEL

Moderator: Worth M. Gross, M.D., *Tulsa*

The functions and responsibilities of the Governor's Office, the Attorney General and the Finance Office are discussed, as each relates to the Executive Branch.

THE GOVERNOR—Dewey Bartlett

THE ATTORNEY GENERAL—G. T. Blankenship

THE DIRECTOR OF STATE FINANCE—Carl Williams

Questions and Answers

#### 2:30 p.m. THE JUDICIAL BRANCH—PANEL

Moderator: Edgar W. Young, Jr., M.D., *El Reno*

The Judicial Branch, through the jurisdiction of its Court System, safeguards the rights of the people through application of the Oklahoma Constitution and State Laws.

OKLAHOMA'S COURT SYSTEM—Justice Pat Irwin, Vice Chief Justice, Oklahoma Supreme Court

Judge Harold C. Theus, District Judge, Oklahoma County

Questions and Answers

#### 3:00 p.m. Intermission (Visit Exhibits and Coffee Bar)

#### 3:30 p.m. THE LEGISLATIVE BRANCH—PANEL

Moderator: Raymond F. Hain, M.D.

How state government serves the people through the legislative process—organization of each house, the committee system, roles of leadership, correlation of activities, the life cycle of a bill, and the Legislative Council's role.

SENATE—Clem McSpadden, President Pro Tempore

HOUSE OF REPRESENTATIVES—Rex Privett, Speaker

LEGISLATIVE COUNCIL—Jack Rhodes, Director

Questions and Answers

#### 5:00 p.m. ADJOURNMENT

## President's Inaugural Dinner - Dance

**Saturday Night • May 18th • Skirvin Tower Hotel**

An extraordinary gourmet menu awaits you and your wife at the big Inaugural Dinner-Dance. A social hour at 6:30 p.m. around the Skirvin Hotel's Sun Suite Pool will be followed at 7:30 p.m. by the banquet and dance in the Persian Room of the Skirvin Tower Hotel. The gourmet menu includes such exotic dishes as Tournedos of Beef on Croutons and Crab Cake Appetizers. Al Good and his orchestra will play for the dance which begins at 9:00 p.m.

Scott Hendren, M.D., Oklahoma City, is to be inaugurated as OSMA's 63rd President since its incorporation in 1905.

The poolside cocktail party to precede the dinner will feature the music of Manuel Cruz and his Los Tropicales.

Tickets for a wonderful evening are only \$10.00 each, obtainable from the OSMA, P.O. Box 18696, Oklahoma City. Get them early!



**SCOTT HENDREN, M.D.**  
Oklahoma City, Oklahoma



# Gala Gaslight Party

Friday — May 17th — Skirvin Hotel — Imperial Ballroom



Four beautiful flappers and five great jazz musicians will fly to Oklahoma City from Chicago to furnish the entertainment for the gala Gaslight Party, Friday, May 17th. The Skirvin Hotel's Imperial Ballroom will rock with the fire and flash of the roaring twenties' Dixieland music.

Free beer and pretzels will be the bill of fare during the four hours of fun. Setups will be provided. During the evening two \$100 lifetime memberships in the International Gaslight Club will be presented as door prizes to lucky physicians.

Some outstanding moments of the party will occur when members of the audience are brought to the stage by the girls to do the Charleston and twist in the true gaslight fashion.

Table seating will be provided for 500 people . . . so come one—come all! The party will last from 8:00 p.m. until midnight.

Tickets for the gala Gaslight Party will be \$7.50 per person and will include draught beer, setups and party favors. Please order your tickets now from the OSMA Executive Office, P.O. Box 18696, Oklahoma City 73118.



# Technical Exhibitors

The Technical Exhibit of the 62nd Annual Meeting of the Oklahoma State Medical Association will be held on the second floor of the Skirvin Hotel's Convention Center.

Abbott Laboratories  
Affiliated Credit Bureau, Ltd.  
Ampex Video Tape  
Astra Pharmaceutical Products, Inc.  
Ayerst Laboratories  
Blue Cross and Blue Shield Plans of Oklahoma  
Bristol Laboratories  
Ciba Pharmaceutical Company  
The Coca Cola Company  
Jackie Cooper Oldsmobile  
Dictaphone Corporation  
Encyclopaedia Britannica  
Marshall Erdman Company  
Flint Laboratories  
Geigy Pharmaceuticals  
Gerber Products Company  
John Hancock Mutual Life Insurance Company  
Hoechst Pharmaceutical Company  
Horaney's Sporting Goods  
Insurance Company of North America  
Investors Diversified Services, Inc.  
Lakeside Laboratories, Inc.  
Lanier Company  
Lederle Laboratories  
\*Eli Lilly and Company  
McNeil Laboratories, Inc.  
Mead Johnson Laboratories  
Medco Products Company, Inc.  
Melton Company, Inc.  
Merck Sharp & Dohme  
Merrill Lynch, Pierce, Fenner & Smith, Inc.

\*Contributor to the Scientific Program

Mid-Continent Surgical Supply Co.  
Mid-West Surgical Supply Co.  
Murray Myers Company  
The Mutual Benefit Life Insurance Company  
Niagara Cyclo-Massage of Oklahoma  
Oklahoma Data Service Company  
Oklahoma Regional Medical Program  
Ortho Pharmaceutical Corporation  
OSMA Group Insurance  
Pacific Medical Equipment Company  
Paddock Pools  
Parke, Davis & Company  
Pfizer Laboratories  
Professional Management Midwest  
Professional Services, Inc.  
R. J. Reynolds Tobacco Company  
Roche Laboratories  
J. B. Roerig  
William H. Rorer, Inc.  
Sandoz Pharmaceuticals  
G. D. Searle & Company  
Seven-Up Bottling Company  
Smith Kline & French Laboratories  
Smith, Miller & Patch, Inc.  
E. R. Squibb & Sons, Inc.  
Syntex Laboratories, Inc.  
Systemedics of Oklahoma, Inc.  
S. J. Tutag & Company  
United Medical Laboratories, Inc.  
The Upjohn Company  
Warner-Chilcott Laboratories  
Barney Welch and Associates  
Westwood Pharmaceuticals

# Scientific and Institutional Exhibits

Acute Leukemia—Paul T. Condit, M.D., Oklahoma City  
Aneurysms and Occlusive Disease—R. M. Shepard, Jr., M.D., Tulsa, Harold A. White, M.D., Tulsa, Albert L. Shirkey, M.D., Tulsa  
Selective Pan Angiography—Gerald Honick, M.D., Oklahoma City

American Cancer Society, Oklahoma Division  
American Medical Association

Cornell Automotive Crash Injury Research  
Oklahoma Council For Health Careers  
Oklahoma Heart Association  
Oklahoma Health Sciences Foundation  
Oklahoma Medical Political Action Committee  
Oklahoma Physical Therapy Association, Inc.  
Oklahoma Association of Pathologists  
Oklahoma Thoracic Society  
Southern Medical Association



# A G E N D A \*

## House of Delegates Meetings



**RUSSELL B. ROTH, M.D.**  
 Doctor Roth, Vice-Speaker of the AMA House of Delegates, will address the Closing Session of the OSMA House of Delegates, May 18th.



**JOHN JARMAN, M.C.**  
 Mr. Jarman, Oklahoma District V Representative to the United States Congress, will speak to the House of Delegates on Friday morning, May 17th

### ANNUAL MEETING—OPENING SESSION

**8:30 a.m., May 17th, Room A, Convention Center, Skirvin Hotel**

- |                                     |                                |
|-------------------------------------|--------------------------------|
| I. Call to Order                    | VII. Board of Trustees Report  |
| II. Report of Credentials Committee | VIII. Treasurer's Report       |
| III. Introduction of Guests         | IX. Council, Committee Reports |
| IV. Remarks of Speaker              | X. Introduction of Resolutions |
| V. Nomination of Officers, Trustees | XI. Necrology Report           |
| VI. Report of President             |                                |

(Reference Committees will meet at 4:00 p.m., May 17th in the Skirvin Hotel)

### ANNUAL MEETING—CLOSING SESSION

**8:30 a.m., May 18th, Room A, Convention Center, Skirvin Hotel**

- |                                     |                                    |
|-------------------------------------|------------------------------------|
| I. Call to Order                    | IV. Election of Officers, Trustees |
| II. Report of Credentials Committee | V. Adjournment                     |
| III. Reference Committee Reports    |                                    |

\*Condensed Version, Subject to Modification

### OFFICERS TO BE ELECTED

President-Elect (One-Year Term)  
 Vice-President (One-Year Term)  
 Secretary-Treasurer (Two-Year Term)  
 Speaker of the House of Delegates (Two-Year Term)  
 Vice-Speaker of the House of Delegates (Two-Year Term)  
 Delegate to the AMA *Position No. I* (Two-Year Term) Francis A. Davis, M.D., Shawnee, Incumbent  
 Alternate Delegate to the AMA *Position No. I* (Two-Year Term) Rex E. Kenyon, M.D., Oklahoma City, Incumbent  
 Delegate to the AMA *Position No. II* (Two-Year Term) Harlan Thomas, M.D., Tulsa, Incumbent  
 Alternate Delegate to the AMA *Position No. II* (Two-Year Term) E. M. Gullatt, M.D., Ada, Incumbent  
 Trustees From District VI through X (Three-year Terms)  
 Alternate Trustee From District XI (To Fill Unexpired Term)



# Oklahoma State Medical Association

## 1968 DELEGATES AND ALTERNATES

SOCIETY	DELEGATE	ALTERNATE DELEGATE
ALFALFA WOODS	Ed L. Calhoon, M.D.	John X. Blender, M.D.
ATOKA BRYAN COAL	Alfred T. Baker, M.D.	A. C. Fina, M.D.
BECKHAM (Roger Mills)	Henry K. Speed, M.D.	William M. Leebron, M.D.
BLAINE	R. A. Conley, M.D.	A. K. Cox, M.D.
CADDO	A. C. Roberson, M.D.	J. B. Miles, M.D.
CANADIAN	F. W. Hollingsworth, M.D.	Edgar W. Young, Jr., M.D.
CARTER	James V. Miller, M.D.	J. H. Veazey, M.D.
LOVE MARSHALL	Frank W. Clark, M.D.	Edward L. Koger, M.D.
CHOCTAW PUSHMATAHA	B. E. Woodruff, M.D.	Henry D. Wolfe, M.D.
CLEVELAND McCLAIN	David Dycus, M.D.	William C. McCurdy, M.D.
	James L. Haddock, M.D.	Charles J. Shaw, M.D.
	Guy V. Rice, M.D.	W. George Long, M.D.
COMANCHE	W. A. Matthey, M.D.	Donald E. Wicker, M.D.
COTTON	Paul Vann, M.D.	John T. Hicks, M.D.
COOKSON HILLS (Cherokee, Adair and Sequoyah)	John Morgan, M.D.	Charles T. Morgan, M.D.
CRAIG		
DELAWARE	J. E. Highland, M.D.	D. H. Olson, M.D.
OTTAWA		
CREEK	Robert G. White, M.D.	Merrill S. Bartlett, M.D.
CUSTER	Ross Deputy, M.D.	James H. Tisdal, M.D.
EAST CENTRAL (Muskogee, Wagoner and McIntosh)	Tom S. Gafford, M.D.	James L. Green, M.D.
	Glen L. Berkenbile, M.D.	M. C. Gephardt, M.D.
	G. W. Tracy, M.D.	Charles G. Fullenwider, M.D.
	E. L. Leonard, M.D.	Joe S. Hester, M.D.
GARFIELD	James F. Tagge, M.D.	Mark D. Holcomb, M.D.
	John A. McIntyre, M.D.	John W. Williams, M.D.
	Paul H. Rempel, M.D.	George T. Ross, M.D.
	M. E. Robberson, M.D.	John M. Moore, M.D.
GARVIN	B. C. Chatham, M.D.	Charles Gibson, M.D.
GRADY	Fred W. Sellers, M.D.	Dwight D. Pierson, M.D.
GREER (Harmon)		
HUGHES	Jack W. Parrish, M.D.	(Not Reported)
SEMINOLE		
JACKSON	Wayne Starkey, M.D.	Lowell Templer, M.D.
	Malcolm Mollison, M.D.	Philip S. White, M.D.
JEFFERSON	Harold Stout, M.D.	William A. Heflin, M.D.
KAY	Robert W. Gibson, M.D.	L. W. Ghormley, M.D.
NOBLE	Charles E. Martin, M.D.	A. M. Brown, Jr., M.D.
KINGFISHER	Ray McIntyre, M.D.	Jack D. Shirley, M.D.
KIOWA	Aubrey Stowers, M.D.	L. G. Livingston, M.D.
WASHITA		
LeFLORE	Jack D. Powell, M.D.	Kenneth G. Lowe, M.D.
HASKELL		
LINCOLN	Harold T. Baugh, M.D.	Carl H. Bailey, M.D.
LOGAN	James S. Petty, M.D.	R. F. Ringrose, M.D.
McCURTAIN	Thomas E. Rhea, M.D.	Thomas D. Howard, M.D.
MURRAY	R. W. Morton, M.D.	Russell W. Lewis, M.D.
NORTHWEST	M. K. Braly, M.D.	Joe L. Duer, M.D.
(Beaver, Dewey, Ellis, Harper and Woodward)	Richard H. Burgtorf, M.D.	Kenneth B. Craig, M.D.



**OKFUSKEE**  
**\*OKLAHOMA**

Charles C. Elliott, M.D.  
 Frank G. Gatchell, M.D.  
 Elwood Herndon, M.D.  
 John R. Trammell, M.D.  
 Allen E. Greer, M.D.  
 James W. Wilson, M.D.  
 Cecil R. Stansberry, M.D.  
 John H. Close, M.D.  
 Walter K. Hartford, M.D.  
 Thomas N. Lynn, M.D.  
 R. B. Carl, M.D.  
 John W. Drake, M.D.  
 Lynn H. Harrison, M.D.  
 Charles W. Cathey, M.D.  
 Marvin K. Margo, M.D.  
 J. B. Snow, Jr., M.D.  
 George H. Garrison, M.D.  
 Lucien Kavan, M.D.  
 Frank H. McGregor, M.D.  
 Don F. Rhinehart, M.D.  
 Wm. A. Cunningham, M.D.  
 S. N. Stone, Jr., M.D.  
 Robert S. Ellis, M.D.  
 Charles D. Bodine, M.D.  
 Lloyd A. Owens, M.D.  
 Barney J. Limes, M.D.  
 J. W. Records, M.D.  
 Harold J. Binder, M.D.

\*All Oklahoma City residents

**OKMULGEE**

**OSAGE**

**PAYNE**

**PAWNEE**

**PITTSBURG**

(Latimer)

**PONTOTOC**

(Johnston)

**POTTAWATOMIE**

**ROGERS**

**MAYES**

**STEPHENS**

**TEXAS**

**CIMARRON**

**TILLMAN**

**\*TULSA**

Jack P. Myers, M.D.  
 Richard W. Loy, M.D.  
 James D. Martin, M.D.  
 Powell E. Fry, M.D.  
 George M. Brown, Jr., M.D.  
 H. V. Schaff, M.D.  
 Clarence P. Taylor, M.D.  
 David C. Ramsay, M.D.  
 Leon D. Combs, M.D.  
 (Not Reported)

(Not Reported)  
 E. L. Buford, M.D.

R. G. Johnson, M.D.  
 Homer D. Hardy, Jr., M.D.  
 Thomas W. Taylor, M.D.  
 Myra A. Peters, M.D.  
 John W. Gaddis, M.D.  
 Herbert S. Orr, M.D.  
 C. S. Lewis, Jr., M.D.  
 Donald L. Brawner, M.D.  
 Robert K. Endres, M.D.  
 S. Y. Andelman, M.D.  
 Robert L. Anderson, M.D.  
 Donald W. Bobek, M.D.  
 Duane E. Brothers, M.D.  
 John E. Kauth, M.D.  
 R. W. Goen, M.D.  
 Norman L. Dunitz, M.D.  
 Robert A. Northrup, M.D.  
 Jack L. Richardson, M.D.

\*All Tulsa residents

**WASHINGTON**

**NOWATA**

James R. McFarland, M.D.  
 Jess D. Green, Jr., M.D.  
 John R. Reid, M.D.

Noel E. Miller, M.D.  
 Ralph A. Smith, M.D.  
 Paul D. Erwin, M.D.  
 A. Stanley Bailey, M.D.  
 Raymond F. Hain, M.D.  
 Robert A. McLauchlin, M.D.  
 J. R. Stacy, M.D.  
 R. Q. Goodwin, M.D.  
 William E. Hood, Jr., M.D.  
 Clarence Robison, Jr., M.D.  
 William N. Harsha, M.D.  
 Carl A. Krieger, M.D.  
 G. Rainey Williams, M.D.  
 Bertha M. Levy, M.D.  
 Robert Sukman, M.D.  
 Mark R. Johnson, M.D.  
 Felix R. Kay, M.D.  
 P. D. Casper, M.D.  
 Haven Mankin, M.D.  
 Irwin C. McLendon, M.D.  
 David A. Campbell, M.D.  
 Vance A. Bradford, M.D.  
 Carter Moody, M.D.  
 Richard D. Stansberry, M.D.  
 Donald Kent Braden, M.D.

Arthur Buell, M.D.  
 Vincent Mazzarella, M.D.  
 John F. Bolene, M.D.  
 Hansel L. Ratliff, M.D.  
 E. H. Shuller, M.D.  
 E. D. Greenberger, M.D.  
 Frank J. Martin, M.D.  
 Carl D. Wiseman, M.D.  
 Roy O. Kelly, M.D.

W. N. Oxley, M.D.

Jack D. Honaker, M.D.  
 Earl E. Smith, Jr., M.D.  
 Hugh B. Nicholas, M.D.  
 Herbert J. Forrest, M.D.  
 Emil E. Palik, M.D.  
 Curtis N. Clifton, M.D.  
 Sol Wilner, M.D.  
 Joseph T. Dilger, M.D.  
 Robert B. Williams, M.D.  
 James K. Boyd, M.D.  
 Roger V. Haglund, M.D.  
 Milton L. Berg, M.D.  
 Walter H. Gary, M.D.  
 Donald F. Mauritson, M.D.  
 Dwane B. Minor, M.D.  
 William R. McShane, M.D.  
 Beryl D. Henwood, M.D.  
 Loren V. Miller, M.D.

O. L. Grigsby, M.D.  
 William J. Russum, M.D.  
 Elvin M. Amen, M.D.



## WOMAN'S AUXILIARY

### OKLAHOMA STATE MEDICAL ASSOCIATION

MAY 16th, 17th, 18th, 1968 SKIRVIN HOTEL OKLAHOMA CITY, OKLAHOMA

Mrs. Virgil Ray Forester, Chairman



MRS. GEORGE H. MILLER  
Tulsa  
*President*



MRS. ALFRED T. BAKER  
Durant  
*President-Elect*



MRS. R. C. L. ROBERTSON  
Houston, Texas  
*Southern Regional Vice-President  
Woman's Auxiliary to the AMA*



MRS. W. C. BRADFORD  
Oklahoma City  
*Founder*





MRS. J. HARTWELL DUNN  
Oklahoma City  
*First Vice-President*



MRS. WILLIAM LEEBRON  
Elk City  
*Second Vice-President*



MRS. HARLAN THOMAS  
Tulsa  
*Program Chairman*



MRS. ROBERT MAYFIELD  
Norman  
*Secretary*



MRS. SCOTT HENDREN  
Oklahoma City  
*Treasurer*



MRS. JAMES DEWAR  
Oklahoma City  
*Treasurer-Elect*



MRS. VIRGIL RAY FORESTER  
Oklahoma City  
*Convention Chairman*

**Not Pictured:**

Mrs. S. N. Musallam, Oklahoma City, Convention Co-Chairman  
Mrs. Joe B. Reynolds, Oklahoma City, Convention Co-Chairman

**FOR YOUR ENTERTAINMENT . . .**

- \*May 16th—6:30-7:30 p.m.—Champagne Hour, Persian Room, Skirvin Tower
- \*May 17th—12:30 p.m.—Luncheon and Style Show, Persian Room, Skirvin Tower
- \*May 17th—8:00 p.m.-12:00p.m.—Gaslight Party, Imperial Ballroom, Skirvin
- \*May 18th—6:30 p.m.-12:30 a.m.—Social Hour, Pool Side, Skirvin Hotel  
President's Inaugural Dinner-Dance  
Persian Room, Skirvin Tower



## GENERAL INFORMATION

### REGISTRATION—MEZZANINE SKIRVIN HOTEL

Thursday, May 16th	1:30 p.m.- 5:00 p.m.
Friday, May 17th	8:30 a.m.-12:00 p.m.
Saturday, May 18th	8:30 a.m.-12:00 p.m.

### HOSPITALITY ROOM MEZZANINE SKIRVIN HOTEL

### DOCTORS' DAY EXHIBITS—BALINESE ROOM SKIRVIN HOTEL

Mrs. Harold Houk, Chairman

### MEDICAL ADVISORS

Ennis Gullatt, M.D., Ada  
Harlan Thomas, M.D., Tulsa  
J. Hartwell Dunn, M.D., Oklahoma City

### CONVENTION COMMITTEE

CHAIRMAN: Mrs. Virgil Ray Forester  
CO-CHAIRMEN: Mrs. S. N. Musallam  
Mrs. Joe B. Reynolds

Registration	Mrs. Hollis Hampton
Credentials	Mrs. J. Hartwell Dunn
Hospitality	Mrs. Robert Morgan
Courtesy	Mrs. Elias Margo
Luncheon	Mrs. S. N. Musallam
	Mrs. Joe B. Reynolds
Publicity	Mrs. John Freede
Decorations	Mrs. Virgil Ray Forester
Past-Presidents' Breakfast	Mrs. Clifford Bassett
Tickets	Mrs. George Winn
	Mrs. Lloyd Owens
	Mrs. Thomas Buxton
	Mrs. Arthur Elliott
Fashion Show	Mrs. Joseph Kelso
Promotion	Mrs. Richard Clay

## PROGRAM

### THURSDAY, MAY 16th, 1968

4:00-6:00 p.m.—Pre-Convention Board Meeting, Regency Room  
6:30-7:30 p.m.—Champagne Hour, Persian Room, Skirvin Tower

### FRIDAY, MAY 17th, 1968

8:00 a.m.—PAST-PRESIDENTS' BREAKFAST, Sutton Room, Skirvin Hotel. Hostess: Mrs. Clifford Bassett

8:30 a.m.—REGISTRATION AND HOSPITALITY

9:30 a.m.—FIRST GENERAL SESSION. Balinese Room, Skirvin Hotel, Mrs. George H. Miller, President Woman's Auxiliary to the Oklahoma State Medical Association

CALL TO ORDER: Mrs. Miller

INVOCATION: Mrs. E. Cotter Murray, Finance Chairman, Woman's Auxiliary to the Oklahoma State Medical Association

PLEDGE OF LOYALTY: Mrs. Maxwell A. Johnson

WELCOME: Mrs. Virgil Ray Forester, President, Woman's Auxiliary to the Oklahoma County Medical Society

RESPONSE: Mrs. Clinton Gallaher, Past-President, Woman's Auxiliary to the Oklahoma State Medical Association

GREETINGS: Scott Hendren, M.D., Oklahoma City, President-Elect, Oklahoma State Medical Association

INTRODUCTION OF SPECIAL GUESTS

PRESENTATION OF PAST-PRESIDENTS: Mrs. Clifford Bassett, Past-President, Woman's Auxiliary to the Oklahoma State Medical Association

SPECIAL GUEST SPEAKER: Mrs. R. C. L. Robertson, Houston, Texas, Southern Regional Vice-President, Woman's Auxiliary to the American Medical Association

ANNOUNCEMENTS: Mrs. Virgil Ray Forester, Convention Chairman

ROLL CALL BY COUNTIES: Mrs. Robert Mayfield, Norman, Secretary

REPORT OF CREDENTIALS COMMITTEE:

READING AND ADOPTION OF MINUTES: Mrs. Robert Mayfield, Secretary

TREASURER'S REPORT: Mrs. Scott Hendren, Oklahoma City, Treasurer, and Mrs. James Dewar, Oklahoma City, Treasurer-Elect

REPORT OF OFFICERS:

First Vice-President—Mrs. J. Hartwell Dunn, Oklahoma City

Second Vice-President—Mrs. William Leebron, Elk City

Corresponding Secretary — Mrs. Hugh Boyd, Tulsa

Parliamentarian—Mrs. Richard Clay, Oklahoma City

Editor, *Sooner Physician's Wife*, Mrs. W. R. R. Loney

Editor, Auxiliary Page, *The Journal*, Oklahoma State Medical Association, Mrs. Tom Sparks

REPORTS OF COMMITTEE CHAIRMEN:

American Medical Education and Research



Foundation—Mrs. John Williams, Enid  
 Bylaws and Revisions—Mrs. Frank Flack, Tulsa  
 Community Service—Mrs. R. E. Herndon, Chickasha  
 Doctors' Day—Mrs. Harold Houk, Ponca City  
 Finance and Budget—Mrs. E. Cotter Murray, Oklahoma City  
 Health Careers—Mrs. Arthur Springall, Oklahoma City  
 International Health Activities—Mrs. John Kienzle, Shawnee  
 Legislation—Mrs. Raymond Peeples, Tulsa  
 OMPAC—Mrs. Everette Cooke, Oklahoma City  
 Loan Fund—Mrs. Milton Berg, Tulsa  
 Mental Health—Mrs. Clifford Bassett, Cushing  
 Program—Mrs. Harlan Thomas, Tulsa  
 Rural Health—Mrs. Floyd Simon, Clinton  
 Disaster Preparedness-Safety—Mrs. Ed Calhoon, Beaver  
 Woman's Auxiliary to the Student American Medical Association—Mrs. James F. McMurry, Oklahoma City  
 Nominating Committee—Mrs. Alfred T. Baker, President-Elect

MEMORIAL SERVICE: Mrs. Richard Witt, Past-President of the Woman's Auxiliary to the Oklahoma State Medical Association  
 ADJOURNMENT

12:30 p.m.—LUNCHEON AND STYLE SHOW

8:00 p.m.—GASLIGHT PARTY

## SATURDAY, MAY 18th, 1968

8:30 a.m.—REGISTRATION AND HOSPITALITY, Mezzanine, Skirvin Hotel

9:00 a.m.—SECOND GENERAL SESSION, Persian Room, Skirvin Tower, Mrs. George H. Miller, President, presiding

INVOCATION: Mrs. Richard Clay, Oklahoma City

PLEDGE OF LOYALTY: Mrs. Scott Hendren, Oklahoma City

WELCOME: Mrs. J. Hartwell Dunn, Oklahoma City

RESPONSE: Mrs. John Gardner, Shawnee

GREETINGS: Maxwell A. Johnson, M.D., Tulsa, President, Oklahoma State Medical Association

INTRODUCTION OF GUESTS

ROLL CALL BY COUNTIES: Mrs. Robert Mayfield, Norman, Secretary

REPORT OF CREDENTIALS COMMITTEE

REPORT OF COUNTY PRESIDENTS:

Atoka-Bryan-Coal ..... Mrs. W. A. Hyde  
 Durant

Carter-Love-Marshall ... Mrs. Don Mannerberg  
 Ardmore

Cleveland-McClain ..... Mrs. Bill Silman  
 Norman

Comanche-Cotton ..... Mrs. David Kalbfleisch  
 Lawton

Custer ..... Mrs. Floyd Simon  
 Clinton

East Central ..... Mrs. Wm. N. Weaver  
 Muskogee

Garfield-Kingfisher-Major ..... Mrs. L. F. Shryock  
 Enid

Grady-Caddo ..... Mrs. Charles Gibson  
 Chickasha

Kay-Noble ..... Mrs. Harold Houk  
 Ponca City

Kiowa-Washita ..... Mrs. Wm. Bernell  
 Hobart

Oklahoma ..... Mrs. Virgil Ray Forester  
 Oklahoma City

Okmulgee ..... Mrs. Robert Alexander  
 Okmulgee

Pittsburg ..... Mrs. Ross Rumph  
 McAlester

Pontotoc-Johnston ..... Mrs. Clarence Taylor  
 Ada

Pottawatomie ..... Mrs. John Gardner  
 Shawnee

Stephens ..... Mrs. R. D. Taylor  
 Duncan

Tulsa ..... Mrs. Worth Gross  
 Tulsa

Washington-Nowata ..... Mrs. Brock Westbrook  
 Bartlesville

## UNFINISHED BUSINESS

### NEW BUSINESS

ELECTION OF DELEGATES TO NATIONAL CONVENTION

ELECTION OF OFFICERS

INSTALLATION OF OFFICERS: Mrs. R. C. L. Robertson, Houston, Texas, Southern Regional Vice-President, Woman's Auxiliary to American Medical Association

PRESENTATION OF PAST-PRESIDENT'S EMBLEM: Mrs. Richard Clay

PRESENTATION OF PRESIDENT'S PIN AND

GAVEL: Mrs. George H. Miller

RESPONSE: Mrs. Alfred T. Baker

ANNOUNCEMENTS

ADJOURNMENT

11:30 a.m.—INAUGURAL LUNCHEON AND POST-CONVENTION SCHOOL OF INSTRUCTION, Persian Room, Skirvin Tower. Mrs. Alfred T. Baker, President of the Woman's Auxiliary to the Oklahoma State Medical Association, presiding

6:30 p.m.—SOCIAL HOUR AND RECEPTION

7:30 p.m.—PRESIDENT'S INAUGURAL DINNER-DANCE, Persian Room, Skirvin Tower



# Oklahoma State Medical Assistants Society

## 20th Annual Convention

May 17th, 18th, 19th, 1968

Habana Inn

2200 N.W. 39th Expressway

Oklahoma City

### FRIDAY, MAY 17th

- 10:00 a.m. Board of Directors Meeting  
10:00-1:00 Registration  
1:00 p.m. House of Delegates Meeting  
5:30-7:00 p.m. Registration  
8:00 p.m. Pool Side Party—Courtesy  
Medical Service Society

### SATURDAY, MAY 18th

- 7:30-2:45 Registration  
8:00 a.m. General Session—Betty Whitworth, President, Presiding  
Invocation: Dean Odell, Clinton Chapter  
Welcome: Mayor James Norick, *Oklahoma City*  
Response: Ann Strobbridge  
Guest Speaker: Guy Fuller, M.D., *Oklahoma City*  
Door Prizes: Courtesy Tulsa County  
9:00 a.m. House of Delegates Meeting  
10:15 a.m. "Our Oklahoma Legislature"—Senator Richard Stansberry, M.D., *Oklahoma City*  
Door Prizes: Courtesy Garfield County  
11:15 a.m. Visit Exhibits  
12:00 noon Luncheon — Betty Whitworth, Presiding  
Invocation: Goldie McCoy, Enid Chapter  
Skit by Oklahoma County Medical Assistants  
Door Prizes: Courtesy Washington-Nowata Counties  
1:45 p.m. Office Machine Demonstrations  
2:45-5:30 Medical - Legal Symposium: John M. McPherren, *Oklahoma City*, Attorney for OSMA  
Rod Frates, *Oklahoma City*, OSMA Insurance Consultant  
Door Prizes: Courtesy South-west Counties

- 6:30 p.m. Social Hour—Courtesy Parke, Davis Co.  
7:30 p.m. Banquet — James R. Ricks, M.D., *Oklahoma City*, Master of Ceremonies  
Invocation: Marian Easley, Lawton Chapter  
Door Prizes: Courtesy Oklahoma County  
Guest Speaker: Jack Swiden-sky, Assistant Oklahoma County Attorney  
Awards  
Installation of Officers by Ruth Dize, AAMA Vice-President  
Announcements

### SUNDAY, MAY 19th

- 8:00 a.m. Breakfast — Invocation: Frances Hollander, Bartlesville Chapter  
Guest Speaker: C. Jack Young, M.D., *Oklahoma City*  
Door Prizes: Courtesy Northwest Counties  
9:15 a.m. Leadership Training Workshop—"Duties of An Officer"—Ruth Dize  
Door Prizes: Courtesy Kay-Noble Counties  
11:15 a.m. Board of Directors Meeting and Final Business Session — Old and New Officers  
12:30 p.m. Luncheon — Ann Strobbridge, Presiding  
Invocation: Betty Bray, Tulsa County  
Guest Speaker: Scott Hendren, M.D., President Oklahoma State Medical Association, *Oklahoma City*  
Door Prizes: Courtesy Custer County  
2:00 p.m. Grand Prize Award Drawing —for Pre-Registrants  
Adjournment



## DEATHS

WILKIE D. HOOVER, M.D.

1908-1968

Wilkie D. Hoover, M.D., a prominent Tulsa physician for over 30 years, died in Rochester, Minnesota, March 9th, 1968. Born in Wynnewood, Oklahoma, Doctor Hoover graduated from the University of Oklahoma School of Medicine in 1933. He established his practice in Tulsa where he specialized in industrial medicine and surgery.

In addition to his private practice, Doctor Hoover was active in organized medicine which he served in many capacities. He was a past-president of the Tulsa County Medical Society; a vice-president of the Oklahoma Chapter of the American Academy of General Practice; a Councilor and Trustee of the Oklahoma State Medical Association; and from 1958 to 1965, he served as an OSMA Delegate to the American Medical Association.

WADE H. SISLER, M.D.

1897-1968

A 71-year-old Tulsa orthopedic surgeon, Wade H. Sisler, M.D., died in Tulsa, March 19th, 1968. A native of Como, Mississippi, Doctor Sisler graduated from Northwestern University School of Medicine in 1921. Following several years of postgraduate work in orthopedics, he practiced one year in Bristow, Oklahoma before moving to Tulsa in 1926.

He was the father of Jerry Sisler, M.D., Tulsa physician.

J. E. HOLLIS, M.D.

1885-1968

J. E. Hollis, M.D., a Bristow physician since 1923, died March 15th, 1968. Born in Arkansas, Doctor Hollis was a graduate of the University of Tennessee School of Medicine and was a specialist in ophthalmology.

For long years and dedicated service to his profession, Doctor Hollis was presented a Life Membership in the Oklahoma State Medical Association in 1961.

ROBERT M. SHEPARD, M.D.

1889-1968

A retired Tulsa physician, 78-year-old Robert M. Shepard, M.D., died March 6th, 1968. The Mississippi native graduated in 1913 from the University of Tennessee School of Medicine. Before moving to Tulsa, he had practiced two years in Paterson, New Jersey and five years in Talihina, Oklahoma.

A specialist in pulmonary diseases, Doctor Shepard had been a director of the Tulsa County Public Health Association, the Tulsa County Tuberculosis Association and the Oklahoma Tuberculosis Association. He was one of 38 founding physicians of the American College of Chest Physicians, organized in 1935.

Doctor Shepard was the father of Robert M. Shepard, Jr., M.D., a Tulsa thoracic surgeon.

In 1964, the OSMA honored Doctor Shepard for his years of medical practice when they presented him with a Fifty-Year-Pin.

TOM HALL MITCHELL, M.D.

1900-1968

Tom Hall Mitchell, M.D., retired, Tulsa industrial physician, died January 25th, 1968.

The 67-year-old native of Bessemer, Alabama, graduated from the Medical College of Virginia in 1931. Following several years of postgraduate work, he practiced in Mobile, Alabama, specializing in urology, before moving to Tulsa in 1938.

In 1966, the Oklahoma State Medical Association presented Doctor Mitchell with a Life Membership in recognition of his service to his profession. □

## BOOK REVIEWS

MODERN MOTHERHOOD. H. M. I.

Liley, M.D., Director of the Antenatal Clinic, National Women's Hospital, Auckland, New Zealand, First edition. New York: Random House, 1967, cloth 238 pp.

Doctor Virginia Apgar, of the National Foundation, states in her foreword to *Modern Motherhood*, "Doctor Liley effectively dispels the myths and explains the mysteries of life before birth without minimizing the miracle of human development. To Doctor Liley the unborn child is never the abstract fetus of the textbooks."

Doctor Liley does indeed convince the reader of the unborn child's individuality—describing how he is endowed with those characteristics which will distinguish him from others in the "outer life." She tells how the fetus' performance during the prenatal period usually indicates his behavior in infant life and on into maturity.

Doctor Liley presents a sensible evaluation of "natural childbirth"—Doctor Read's method of educating women so that they can participate in the birth process. She points out that all women are not physiologically able to give birth without some aid—drugs, forceps, etc. Read's contribution was to help put childbirth into its proper perspective in emphasizing the sense of joy and achievement in giving birth, rather than the traditional fear.

A strong case for breast feeding, a custom which has become less and less prevalent in the Western world, is given. She states that the greatest problem in breast feeding is not physiological but largely a lack of education about our own humanity. There are few valid reasons for not breast feeding. It represents the completion of pregnancy—the mother finishes the job she started.

Much of the data and viewpoints of fetology presented in the book come from the working alliance the author has with her husband, Doctor A. William Liley, world-renowned obstetrician who developed the daring procedure of intrauterine trans-



fusions for infants threatened by Rh complications.

An appendix of practicalities and a detailed index complete an entertaining, imaginatively-written, never-patronizing text for the intelligent, concerned parents of today's modern world.—*Mrs. H. D. Riley, Jr.*

**YOU ARE AS YOUNG AS YOUR SPINE.** By Editha Hearn, 120 pp. with illustrations, \$4.50. Doubleday and Company, Inc., Garden City, New York. 1967.

The author is a physiotherapist who for over 15 years has worked with James Cyriax, M.D., Orthopedic Surgeon at St. Thomas's Hos-

pital in London. Using his method of treatment for slipped discs which includes manipulation, traction and corrective movements she is able to assess back problems and devise programs for their alleviation.

The book is designed primarily for patients and as such is written in an informal manner in terms easily understood by laymen. Each chapter is interspersed with adequate illustrations to insure that the reader understands the problem and how it may be corrected. The anatomy of the spine and its deviations are discussed, together with their correct alignment in activities of daily living in order to prevent or alleviate back lesions and pain in cervical,

lumbar and sacral areas. The importance of rest and proper positioning for all movements is stressed.

Miss Hearn advocates both isometric and isotonic exercises and devotes a short chapter to them. A final chapter discusses the reasons why so many people acquire disc trouble. This information might have been better placed near the beginning of the book in order to acquaint readers with the extent of the problem.

The book should interest those with back problems and act as a handy reference for physicians, nurses, physical therapists and others interested in health.—*Miss Thelma Pedersen* □

## Miscellaneous Advertisements

1964 OU GRADUATE completing first-year surgery residency desires location in Oklahoma town, 6,000 to 20,000 population. Military obligations completed. Contact William L. Edwards, M.D., 6633 Askew Avenue, Kansas City, Missouri 64132.

INTERNIST, available November 1st, 1968, desires group or association practice in Oklahoma City or Tulsa. 1960 graduate of Tulane; three years internal medicine residency; military obligations completed; completing renal fellowship. Contact Martin P. Rappaport, M.D., 7621 North Sheridan Road, Chicago, Illinois 60626.

**FOR SALE:** 1 heavy cautery and tips; 1 standard cautery and tips; ophthalmoscope; gynecological instruments; vaginal speculae, assorted sizes; weighted speculum; biopsy; curetts; tenaculum; dilators; complete T & A instruments; assorted surgical instruments; sponge forceps; towel clips; hemostats, thumb-forceps; needle holders; Allis, scissors, Ochners, Peans, Carmalts, etc. Contact Wayman J. Thompson, M.D., 3120 N.W. 19th, Oklahoma City 73107. Phone WI 3-5541.

**WANTED: EXPOSED X-RAY FILM FOR SALVAGE.** What have you? Write today! Murray, 3305 Bryan, Dallas, Texas 75204.

**GENERAL PRACTITIONER** wanted for industrial work with large group practice in Tulsa. Must have one year's residency. Contact Key G, The Journal, Oklahoma State Medical Association, P.O. Box 18696, Oklahoma City, Oklahoma 73118.

**MAKE OFFER:** Bird-Mark 7, Medcosonlator and miscellaneous supplies. Contact Dan E. Chesnut, M.D., 125 East Main Street, Wilburton, Oklahoma.

**PHYSICIAN WANTED** to work full-time in university health work at Oklahoma State University, Stillwater. Excellent working conditions, regular hours, and many extra benefits. Contact Donald L. Cooper, M.D., Director, Student Health Service, Oklahoma State University, Stillwater, Oklahoma.

**WANTED:** G.P., Pediatrician. Excellent opportunity for solo or group practice. Salary or minimum open for negotiation. New hospital under construction. Contact R. A. Conley, M.D., MA 3-7333, Watonga, Oklahoma.

**PHYSICIAN WANTED** for Job Corps Center, Guthrie, Oklahoma. Resident physician needed to care for 400 girls. Attractive salary. Contact Don Crawford, Personnel Director, P.O. Box 978, Guthrie, Oklahoma 73044.

**WELL ESTABLISHED** general practitioner, surgeon and obstetrician, retiring due to health. Lucrative practice available immediately for reasonable value of office equipment. Terms, if desired. Contact L. P. Hetherington, M.D., 304 First National Bank Building, Miami, Oklahoma.

**GP NEEDED FOR GRANITE.** Equipped clinic and established practice available in nice Southwestern Oklahoma community; trade territory of 2,500; new hospital and professional help ten minutes away; industrial medical opportunity at reformatory available as additional incentive. Contact E. J. Hahn, City Clerk, Granite, Oklahoma.

**PRIME SPACE** for physician. 900 square feet, located across the expressway, north of the Baptist Hospital. Great need for general practitioner in this area. Will redecorate or remodel to suit tenant. VI 8-4877 or VI 3-6720. □



The

JOURNAL

MAY  
1968  
Vol. 61, No. 5

of the Oklahoma State Medical Association

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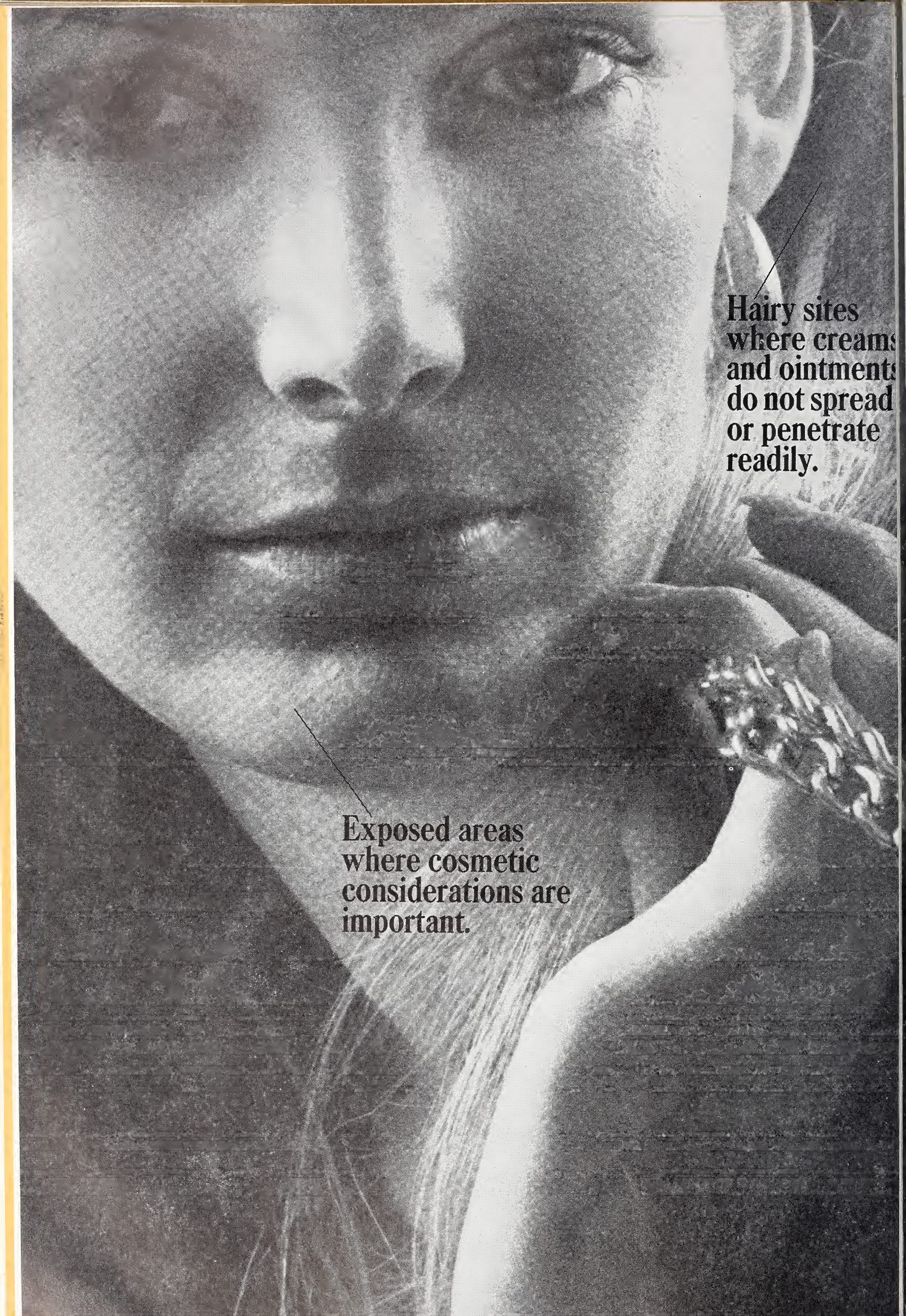
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Hairy sites  
where creams  
and ointments  
do not spread  
or penetrate  
readily.

Exposed areas  
where cosmetic  
considerations are  
important.



## Is Urology Dead?

WITH THE freezing of the prostate gland by an energetic cryotherapist in Buffalo two years ago the last bastion of urology was absconded by an alien discipline and many predicted the early demise of the specialty. However, urology is much like the Federal Government: The more it gives away the bigger it gets. Just as theologians have recently inquired whether certain people and ideas are viable in our modern society, so should we speculate on the present and future of urology. Once a proud and all-encompassing specialty, it has been nibbled away to a few nephrons by a variety of our colleagues. The dermatologists were first, relieving us of all social diseases, which I understand have become almost epidemic. Internists and nephrologists roared in with their clean-catch cultures and cranberry juice and rode off with pyelonephritis as their prize. To add insult to injury they also slurred our tool, the catheter, calling it the "perennial purveyor of pyelitis." Plastic surgeons staked claim to all extrophies and hypospadiacs and no one knows how many little girls are now standing to void. Pediatric surgeons grabbed undescended gonads and other youthful anomalies as their property. Endocrinologists have appropriated the adrenal and parathyroid glands for themselves, leaving us only the impotent to endocrinize. And the gynecologist's pill has made vasectomy a thing of the past. A Houston vascular surgeon and his disciples have relieved us of aortography, pioneered by urologist Keller Doss. Renal hypertension is now owned by these dye-hard injectionists. Radiologists have relieved us of intravenous urograms and even claim their fluid cystograms have made cystoscopy obsolete. Psychologists have pied-pipered away our little enuretics, and today the soggy sofa of their offices has replaced the damp mattress of the crib.

Medical school deans have scratched us from their curriculum and hundreds of new M.D.'s haven't the dampest or foggiest notion of where urine comes from. They are now being taught that the X-Y chromosome on a buccal smear is the only physical difference between the sexes, and judging

from the way our young hippies dress, perhaps they are right.

Our fall to anonymity is due in part to urology coming near the end of the alphabet. To rectify this indexed oblivion the specialty should be renamed anurology, since we are most frequently called when the patient can't; that is, when there is an absence of urine. Then we could be alphabetically first, noticed and nurtured by one and all.

Medicare brought a greater demand on private urologists to treat elderly patients. To meet these demands we are vitally interested in training residents and encouraging young doctors to pursue urology. The future will require a growing staff of qualified urologists. We plea for more exposure of medical students and interns to urology. We also welcome the interest and association between our specialty and the general surgeon, internist, radiologist, bacteriologist, dermatologist, gynecologist, endocrinologist, vascular surgeon and organ transplant enthusiast.

Is urology dead? No! In fact, we fervently believe that it will grow and develop in step with all medicine of which we are truly proud to be a part.—*Gordon L. Mathes, M.D. and Raymond F. Mayer, M.D.* □

Reprinted with modifications, by permission of the Memphis and Mid-South Medical Journal, February, 1968.

## As Others See Us

"GET OFF the phone!"

After five minutes conversation that's the cry often heard in a doctor's home. Most teenagers can't live without talking on the phone at least an hour every night, but after years of training doctors' children learn to talk fast to get the important gossip said in five minutes.

When someone gets hurt most parents tend to panic and wonder what to do, but not in a doctor's home. If a finger gets cut a little medicine goes on with a dressing sometimes and the cut is almost as good as new. If anyone has a pain, good old Dad pushes here and there, then tells the patient he's fine or tells him to go to bed for a while.



Playing sick to avoid going to school won't pass at a doctor's home either. You have to be nearly dead before dear Dad will permit your absence. Usually he takes your temperature, gives you a pat on the head or a pill, and off you go.

A big question around a doctor's home is, "When will dinner be ready?" Many nights we don't eat until eight or nine o'clock because of sick patients or some emergency.

Doctors usually have two family cars, but when four licensed drivers live in one house and one car has to stay at home for emergencies then there is a slight feud for the remaining car.

The manners of doctors' children usually are better in public than they are at home. While at home the children slouch around and are quite loud, but in public they turn shy and polite, for a while at least.

Some people consider doctors' children perfect little snobs, but really they are just like everyone else. They aren't nearly so perfect as others make them out to be. In real life or around people they know, there is more noise than one can stand.

Being a doctor's daughter isn't really as bad as it sounds. It's really a great life and we know many doctors' children wouldn't trade it for any other kind of life. □

Ann Dawson and

Carol Dawson

*(This essay was surprising and yet it was not surprising to the authors' father. We publish it with a feeling of pride as well as humility. If other Oklahoma physicians have aspiring authors among their offspring we welcome an opportunity to consider their work for publication in the Journal.—Editor.)*

## *The Washkansky Case: A Focus For Longitudinal Philosophic Considerations*

A RECENT NEWS article described human cardiac transplantation as the surgical equivalent of scaling Mount Everest. When a mountaineer is asked why he climbs mountains, he usually replies, "Because they are there." In the long view, this answer is quite acceptable philosophically because the moun-

taineer risks no life but his own. This same kind of answer by transplanters of human organs might not be so readily accepted if viewed through a distant-focused telescope of philosophic reason. This insinuated long view is that which comes ever sharper into focus as complete success in the transplantation of virtually all human organs approaches reality. It may indeed turn out that the triumphant organ transplanters, standing on the summit of their Everest, may discover that the mountain they have conquered is located in the center of a profound conundrum abyss. There are philosophic questions which ultimately should be asked and answered. Now is as opportune a time as any for their invocation. The major philosophic question in point is as follows: in the long view, is human organ transplantation intended as a non-progressive end solution to organ failure or as an open-ended temporal solution in a continuum toward ever better solutions? In adjunct, are there potential shortcomings implicit in the organ transplantation philosophy as an end solution? Do alternative philosophic solutions of any merit exist?

In order to explore this philosophic area logically, let us first assume that the successful transplantation of all vital organs (other than the brain) from one human to another with complete immunological impunity had already been achieved and had become a safe, commonplace procedure. Ideally, the organ to be transplanted should be healthy, normal and biologically younger than the one replaced. Any lesser criteria would immediately compromise the basic philosophy of this approach. Whether the organ source is a surviving donor, a moribund donor or an organ bank is of no consequence to one possible disconcerting sequitur. This sequitur is based on the first assumption in combination with an additional one. Namely: that the establishment of organ transplantation as a safe routine procedure will subconsciously or consciously predispose the behavior of Man toward an increased abuse of his naturally-endowed set of organs. The relative strength of this second assumption varies with the degree of validity possessed by current evidence relevant to the widespread use of a seemingly endless variety of mechanical, chemical and behavioral means of organ abuse despite



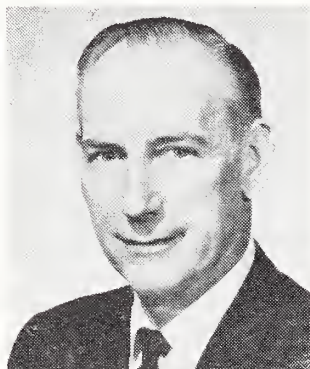
known detrimental consequences. If the first and second assumptions are correct, it follows logically that both an increase in the rate of transplantations and a decrease in the quality of organs available for transplantation will occur. If this general conclusion is correct, a point of diminishing returns will be reached when the quality of donor organs becomes less than that of the afflicted organs to be replaced. At this point, organ transplantation will cease to be a useful procedure and will pass from the scene. Restricted to the long view, could this be termed a biologically progressive philosophy? Could Man survive this ultimate condition, if it were allowed to reach this point?

Are there any long view philosophic alternatives which deserve consideration? Philosophic criticism of any concept obliges at least suggesting a potentially better concept, lest a partially useful concept be replaced by no concept at all. On this basis, of many which must exist, one long view alternative to organ transplantation appears to be both biologically attractive and realistically attainable. In order to examine this philosophic alternative, let us start with another "let's pretend" assumption. Namely: the commonplace existence of individuals of essentially normal biological birth, possessing normal organs by heredity and having experienced biologically normal and physically active childhood up to approximately 21 years of age. This assumption is relatively easy to accept. Two characterizing statements of this type of individual are also biologically credible: 1) biologically, the most ideal set of organs ever available for transplantation in such an individual is that set which he already possesses by natural endowment and 2) the functional reserve present in each of the organs at age 21, if reasonably maintained, could afford the individual an astounding chronological longevity concomitant with a remarkable degree of retained biological vigor. A veritable "mother lode" of human biological progress remains essentially untapped and begs exploitation in the 0 to 21 year age bracket in which the latency for increased maximum functional capacity of organs is invocably present and in the consequent years in which the sustained preventive maintenance of attained functional maxima is unconditionally avail-

able. Important implicitly-related tangential adjuncts such as the reduction of injurious birth traumas, the expurgation of environmental pollutants, an increase in lay education in the area of practical biological knowledge, the dynamic monitoring of biological health and the prevention of debilitating diseases (to name but a few) should be pursued in parallel. All these areas are philosophically relevant to the maximal exploitation of the available potential residing untapped in any individual's naturally-endowed set of normal healthy organs. Man's naturally endowed immunological response to foreign protein is one of the major reasons for his survival thus far. Is there any long view wisdom in attacking this bulwark of natural defense via the "used-parts" philosophic compromise of organ transplantation? Instead, should not the individual, utilizing the natural potential of his own specific proteins, be given a better chance for biologically vigorous longevity by encouraging organ capacity increases in the growing years and sustained preventive maintenance in the consequent years? Philosophically, if projected to a distant focus, the answer would seem to be self-evident.

But what should be done in the indeterminate interim of here and now? Are individuals, whose organs are currently failing irrespective of innocent or self-induced causes, to be denied the option of seeking even one additional moment of life via organ transplantation (or via any other means) because of possible distant-focused consequences to Man? ABSOLUTELY NOT! The individual's right to clutch life tenaciously is the same whether it refers to a biologically vigorous longevity possibly available through sustained preventive maintenance or to "borrowed time" afforded by organ transplantation. The mutually exclusive choice between organ transplantation and sustained preventive maintenance as end philosophies should be made only when both are fully existent and available. However, until future philosophic concepts are derived, which supercede those considered here, we seem to be headed for a choice between the latter two philosophies. Profound philosophic thought should begin now so that if and when this point of decision is reached, the best possible choice may be made.—  
*Michael T.ategola, Ph.D.* □





A paradox in the functioning of any organization is that the greater the interest and activity of the membership, the more difficult is the task of elected officership in the organization. The more apathetic and disinterested the membership, the easier the task of the elected officers.

The corollary to this, of course, is that worthwhile accomplishment, achieving of goals, and benefit of membership are directly proportionate to the interested participation of each member in the affairs of the organization.

You have seen fit to elect me as your president for this year. I do not expect nor want the task to be easy. The year will be rewarding in terms of progress and accomplishment, and if these are forthcoming, I will be eternally grateful.

I appreciate your confidence and welcome your views on every matter of concern to our society.

Sincerely yours,

*Scott Henderson, M.D.*



# Dearterialization of the Liver in Malignant Metastatic Disease

B. P. LOUGHRIDGE, M.D.  
O. ALMERSJÖ, M.D.  
S. BENGMARK, M.D.  
L. O. HAFSTRÖM, M.D.

*Hepatic dearterialization is an experimental method of treating liver metastasis by destroying the blood supply to the tumor implants.*

UNRESECTABLE MALIGNANT metastatic disease of the liver constitutes a most perplexing problem to the surgeon for this generally signifies a rapid demise of the patient regardless of the therapy instituted. Palliative treatment methods are obviously then indicated in the hope of securing for the patient a longer period of symptom-free life.

It has been shown by extensive work that hepatic metastatic tumors derive their principal blood supply from the hepatic artery,<sup>1</sup> and that ligation of the hepatic artery has resulted in tumor regression both experimentally<sup>2</sup> and clinically.<sup>3, 4, 5, 6</sup>

Recently this group reported a case of a 59-year-old male with initially unresectable leiomyosarcoma of the liver.<sup>4</sup> Dearterialization of the liver was performed, and five weeks following that procedure a second laparotomy revealed the tumor was necrotic and of a smaller size thus allowing resection of the tumor.

The authors are presently engaged in a clinical experiment of hepatic dearterialization using the hypothesis of producing tumor necrosis without resulting in extensive liver damage. Little is known about the metabolic effects of hepatic artery ligation in humans; therefore, this report deals with some of the early changes observed following this procedure.

SERUM BILIRUBIN  
(Normal limits 0.5–1.2 mg 100ml)

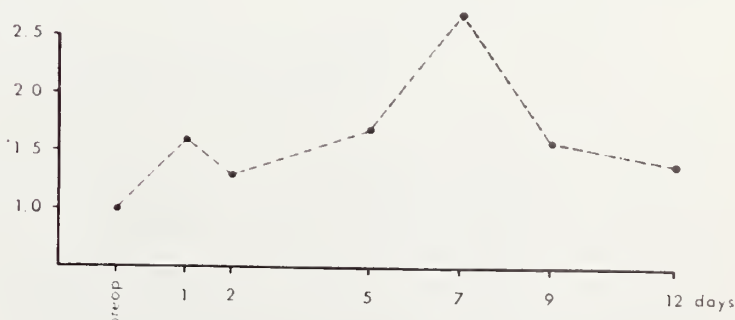


Figure 1

From the Department of Surgery II, University of Goteborg, Goteborg, Sweden.



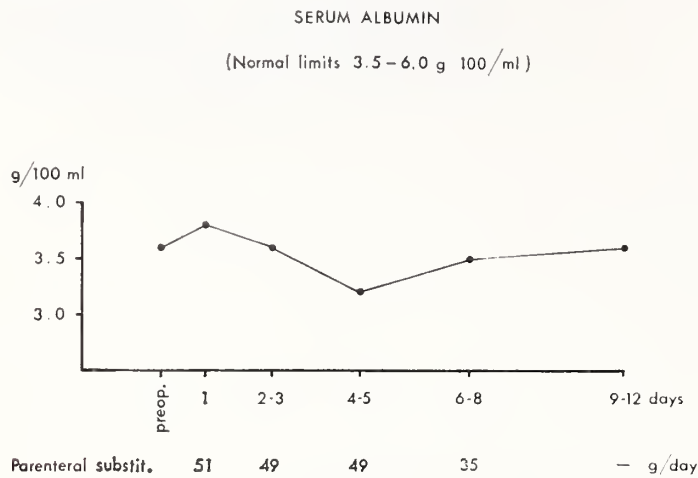


Figure 2

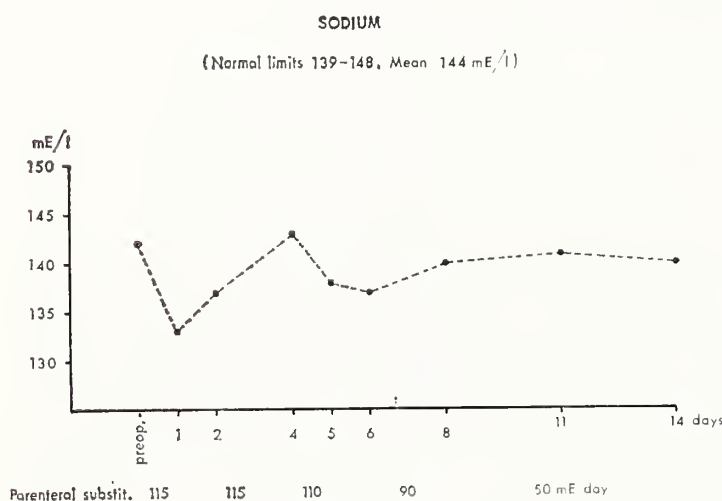


Figure 2

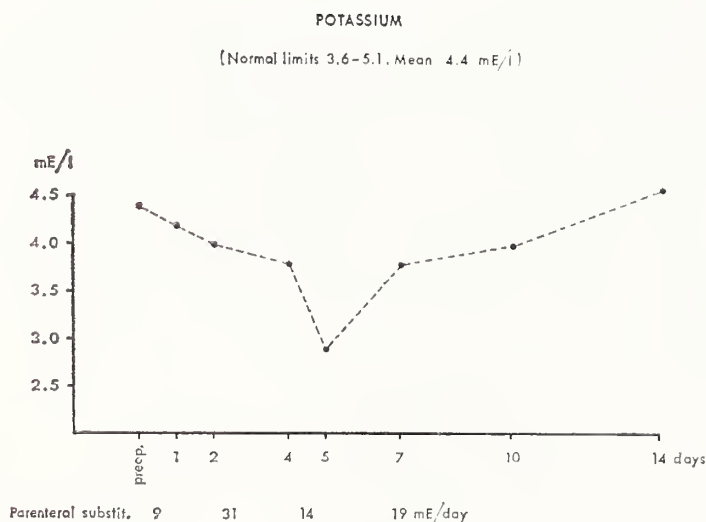


Figure 2

#### MATERIALS AND METHODS

Hepatic dearterialization was performed in seven patients, four male and three female with unresectable hepatic malignancy. Hepatic arteriograms were performed preoperatively and postoperatively in addition to operative portograms in all the patients.

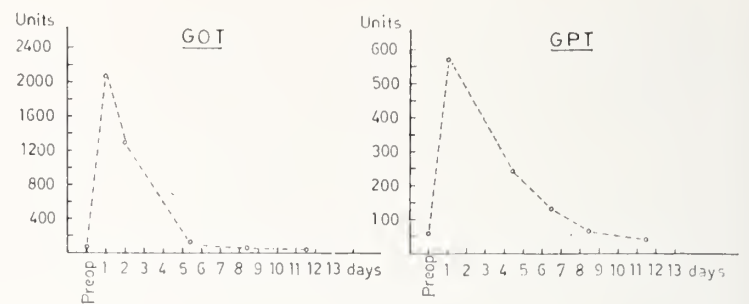


Figure 3

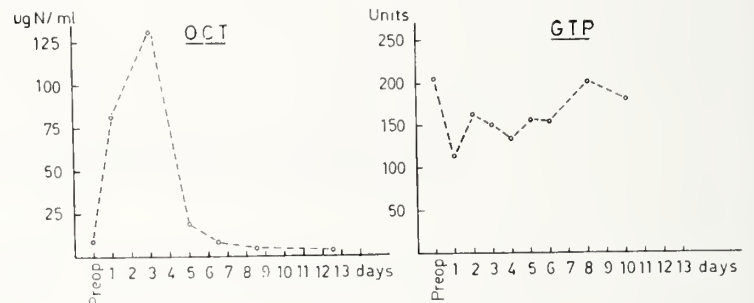


Figure 3

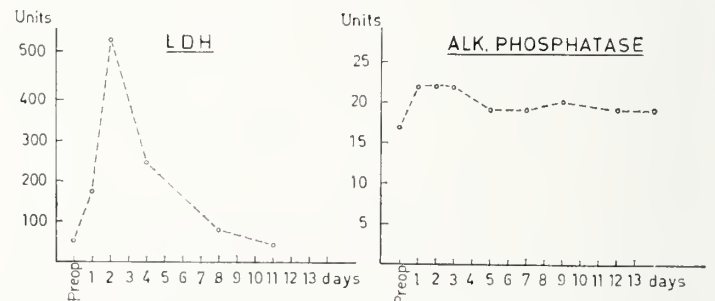


Figure 3

At laparotomy the major arterial supply to the liver was interrupted by dividing the common hepatic artery distal to the gastroduodenal artery. To prevent nutrition of the tumor by collateral arterial supply the fal-ciform ligament, the triangular ligament and omentum were transected, and the peritoneal attachment of the right lobe was divided in addition to freeing the liver from the diaphragm.

All patients received 500 to 1,000 cc of mannitol during the first two postoperative

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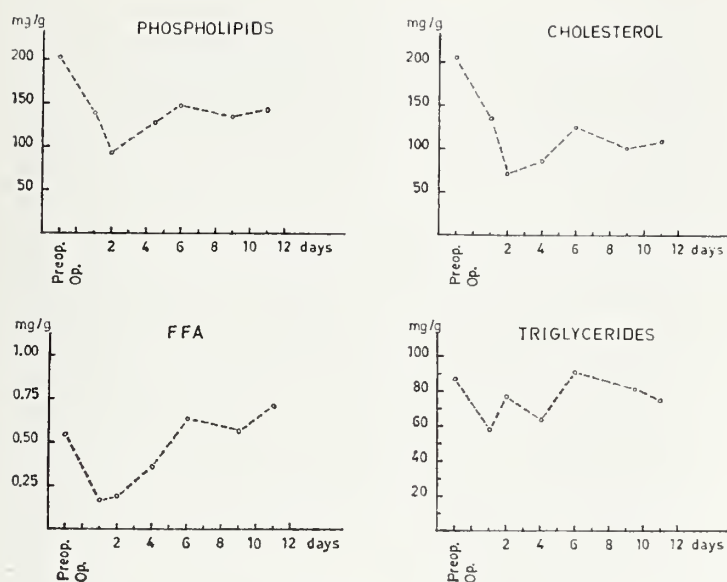


Figure 4

days. Daily infusions of 150 gm of glucose, 200 cc of human albumin and 500 cc of plasma or whole blood were administered during the initial postoperative days in addition to 25 million units of intravenous penicillin daily. The balance of fluids, electrolytes and the serum level of albumin were kept within normal limits by intravenous substitution.

Blood samples were obtained at regular intervals for the following determinations: A. Serum bilirubin,<sup>7</sup> B. Serum glutamyl transpeptidas (GTP),<sup>8</sup> C. Serum lactic dehydrogenase (LDH),<sup>9</sup> D. Serum ornithine carbamoyl transferase (OCT),<sup>10</sup> E. Serum alkaline phosphatase,<sup>11</sup> F. Serum transaminases (GOT, GPT),<sup>12, 13</sup> G. Serum lipid fractions,<sup>14, 15, 16</sup> H. Different coagulation factors,<sup>17-22</sup> I. Serum electrophoreses.<sup>23</sup>

## RESULTS

It appears from figure 1, that there is a slight increase in serum bilirubin after dearterialization. Elevation of serum bilirubin occurred in all patients but generally returned to normal within a few days.

In figure 2 is demonstrated the mean changes and the mean substitution in albumin, sodium and potassium postoperatively.

Transitory enzyme elevations were observed for GOT, GPT, OCT, and LDH. GTP and alkaline phosphatase did not demonstrate any significant changes in serum activity after dearterialization (figure 3).

The total plasma cholesterol, phospholipids, triglycerides, and free fatty acids de-

creased rapidly following the procedure (figure 4) and reached very low values within the first postoperative week. The levels then rose successively to preoperative values.

Despite the supplementation of 200 c.c. albumin and 500 c.c. plasma daily during the first postoperative week, there was a decrease in total proteins (figure 5). Slight decrease was also observed for gamma globulin.

The changes in different coagulation factors is demonstrated in figure 6. It appears that there is no rise in fibrinogen postoperatively as is usually seen after extensive liver resections. Of the other coagulation factors studied, plasminogen and prothrombin-proconvertin seem to be the site of the most significant changes.

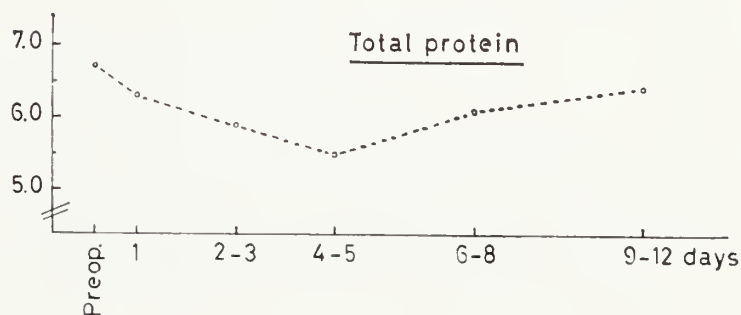


Figure 5

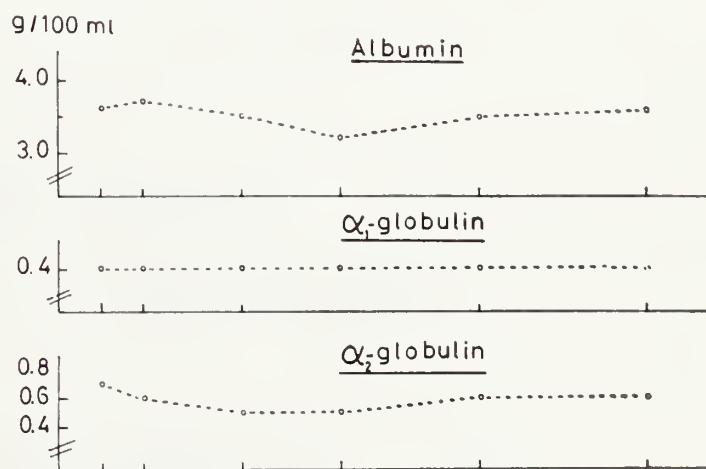


Figure 5

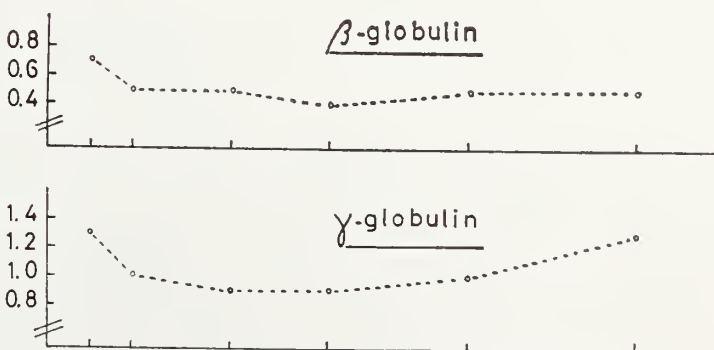


Figure 5



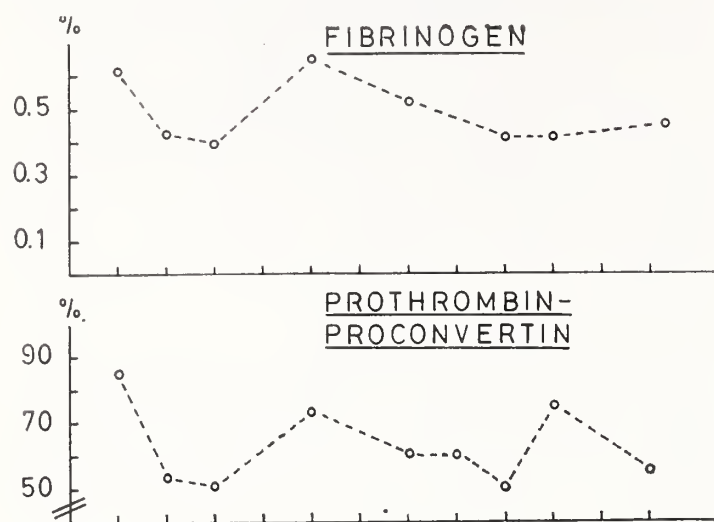


Figure 6

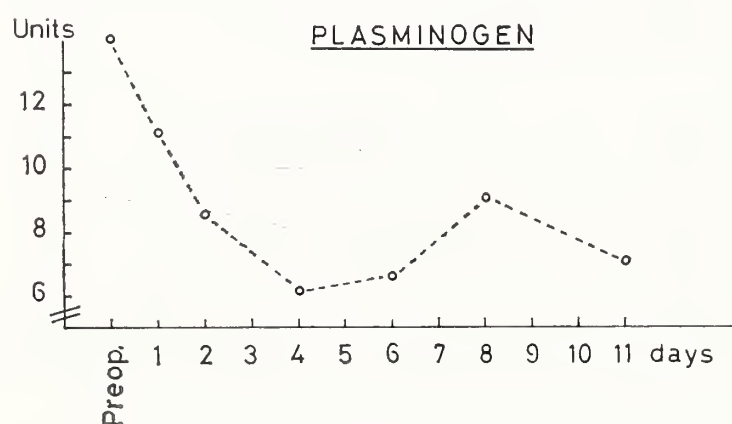


Figure 6

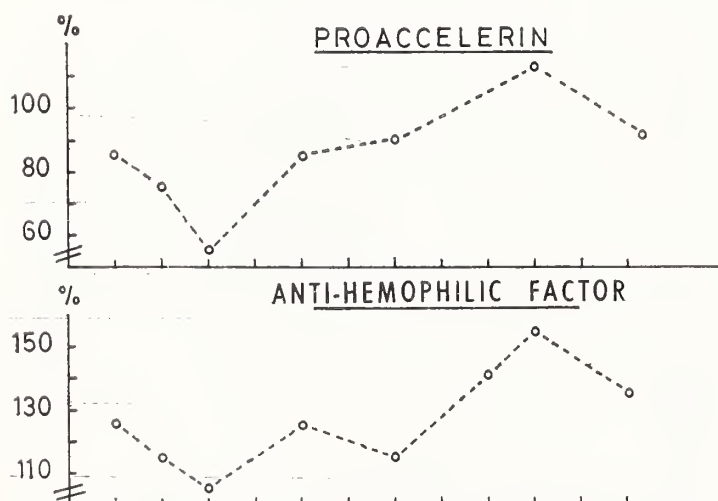


Figure 6

## DISCUSSION

Ligation of the hepatic artery generally is to be avoided, but this procedure has been reported in the literature for various indications as: A. hepatic angioma,<sup>24</sup> B. cirrhosis of the liver,<sup>25</sup> C. hepatic trauma,<sup>26</sup> D. hemobilia,<sup>27, 28, 29</sup> E. hepatic artery aneurysm,<sup>30</sup> and F. hepatic artery-portal vein fistula.<sup>31, 32, 33</sup>

When hepatic artery ligation is indicated, it is usually recommended to ligate the vessels proximal to the gastroduodenal artery so that collateral arterial supply to the liver can be obtained in a retrograde fashion through the gastroduodenal artery. Ligation of the hepatic artery distal to the gastroduodenal branch carries a significant mortality unless the metabolic demands of the patient are well understood and met. Therefore, this procedure is not to be undertaken lightly, and it must be understood that this is an experimental procedure and is not a recommended method for treatment of hepatic cancer at this time.

Since hepatic metastatic tumors receive their main blood supply from the hepatic artery, it has been suggested that ligation of the hepatic artery might result in necrosis of the tumors. Nilsson, *et al.*, in 1967 noted pronounced regression and even disappearance of experimental hepatic tumors in rats following hepatic artery ligation.

In this series of seven patients no operative or immediate postoperative deaths occurred demonstrating that the liver can be maintained on portal venous flow, at least until some arterial supply is established through the development of myriads of small collateral arteries demonstrated by arteriograms within one week following complete hepatic dearterialization. Even though the liver did develop massive collateral arterial supply, it has been shown that the period of time from the procedure to the development of collateral arterial supply is sufficient to produce extensive tumor necrosis.

The postoperative alterations of hepatic function following hepatic dearterialization closely parallel those observed following massive liver resection. The changes observed appeared to be transitory and of the same magnitude as those generally observed after resection of 40 to 80 per cent of the liver parenchyma. The alterations observed appeared to be reversible and possibly minimized by careful attention to postoperative nutritional supplementation.

## SUMMARY

Hepatic dearterialization was performed in seven patients for unresectable hepatic metastatic malignancy. The observed alterations in liver function closely followed those



reported with massive liver resection. These changes appeared to be transitory and the values generally returned to normal levels approximately two weeks following the procedure. □

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# Review of Patients Readmitted to Oklahoma State Tuberculosis Sanatoria

LANCE FOGAN, M.D.  
RICHARD M. BURKE, M.D.

*The majority of patients readmitted to the sanatoria with active tuberculosis had previously left against medical advice and were taking their antituberculosis medications irregularly.*

THE FOLLOWING is an analysis of readmissions to Oklahoma's two state tuberculosis sanatoria. This study, covering a one year period (fiscal year 1966), was prompted by the high readmission rates (29.3 per cent) which these institutions reported. Half the readmissions were found to have active tuberculosis and the remainder inactive tuberculosis or some non-tuberculous condition.

We were particularly interested in those returning with active tuberculosis: how many had a relapse of their disease and how many had disease that had never been controlled since the previous admission? The general experience is that patients treated for the first time who follow the prescribed drug program for two years will have a relapse rate of five per cent or less.<sup>1</sup> Mc-

Clement<sup>2</sup> reports a follow-up on 3,000 tuberculosis patients admitted to Bellevue over a three year period. Among those who had received more than 18 months of appropriate chemotherapy, had sensitive organisms and had become inactive for six months or more, only three relapsed.

Contrasting with the ideally treated patients are the poor results encountered among the majority of uncooperative patients. These failures usually can be traced to behavior problems related to socioeconomic factors rather than the medical aspects such as the original extent of the disease. The rate of patients leaving various state sanatoria throughout the country against medical advice ranges from ten per cent to 35 per cent. In Oklahoma, this rate has averaged 30 per cent.

Oklahoma's two sanatoria are the Eastern Oklahoma State Sanatorium, located near Talihina, and the Western Oklahoma Tuberculosis Sanatorium at Clinton. Since 1961, three tuberculosis facilities in the state have been closed (Shawnee Indian Sanatorium, 120 beds; State Veteran's Hospital, tuberculosis unit, 70 beds; and Talihina Indian Hospital, tuberculosis unit, 100 beds). Accordingly, all tuberculosis patients are now referred to the two state sanatoria, and to the Veteran's Administration Hospital tuberculosis unit (40 beds) in Oklahoma City.



All patients legally committed under the Recalcitrant Tuberculosis Law are treated at the Western Oklahoma Tuberculosis Sanatorium. This law, enacted in 1955, provides that if a person with active tuberculosis behaves in such a way as to constitute a public health menace, he can be committed to a sanatorium. About three patients a month are so committed with an average of 12 occupying the locked unit.

METHOD

This study reviews all readmissions to the two sanatoria during the period July 1, 1965 to June 30, 1966. Each patient's previous discharge record was studied in regard to the status of his disease at that time, along with his type of discharge. Discharges were either recommended, against medical advice, escaped, or disciplinary. Information on the readmission of these same patients includes diagnosis and, if tuberculosis was found, the status of the disease. The tuberculous activity of each patient for the period between hospitalizations was analyzed from outpatient records. This information comprises sputum reports, roentgenographic readings, records of clinic visits and the tuberculosis drug programs followed.

A patient's disease was judged to be inactive if sputum cultures were negative for each of six consecutive months associated with roentgenographic stability.<sup>3</sup>

Those who as outpatients were not followed as closely as described but who did not have any positive cultures from the sputum submitted, or significant roentgenographic changes for two years, and who later developed a positive sputum and/or roentgenographic instability, were considered "probable" relapse cases. The patient who left the sanatorium with active tuberculosis, or inactive disease of less than six months duration, was considered to have never achieved inactive status during the period between hospitalizations if either of the following two conditions was not met: negative sputums, or stable films, demonstrated at least every six months for two years, or annually for five years. Those few cases not falling under these diagnostic criteria because of unsatisfactory follow-up, were qualified with a diagnosis of "probably" inactive or "probably" active.

Table 1  
Classification of Patients by Institution

	W.O.T.S. (Clinton)	E.O.S.S. (Talihina)
Total admissions (7/1/65-6/30/66)	334	323
Number of readmissions (and per cent)	122 (36.5%)	71 (22%)
Per cent of readmissions with active TB	40.9%	48.7%
Per cent of readmissions with relapsed TB	0.8%	5.6%
(A) Previous discharge diagnoses		
active TB	55	24
inactive TB	49	42
non-TB	18	5
1.) Classification of previous discharges of active TB patients		
recommended	3	6
irregular	52	18
2.) Classification of previous discharges of inactive TB and non-TB patients		
recommended	64	37
irregular	3	10
(B) Readmission diagnoses		
active TB	50	35
inactive TB	54	30
? activity	2	0
non-TB	16	6
1.) Classification of readmitted patients with active TB		
never inactive since discharge	32	18
probably never inactive since discharge	11	4
documented relapses	1	4
probable relapses	6	9

An outline of the readmissions to each sanatorium along with their prior discharge data is provided in table 1. Western Oklahoma Tuberculosis Sanatorium, because it handles all the committed patients, deals with more problem cases. They usually have 25 to 30 alcoholics in residence.

FINDINGS

Previous Discharge Diagnoses

*Western Oklahoma Tuberculosis Sanatorium*—Sixty-seven of the immediate past hospitalizations were terminated in an inactive (49) or non-tuberculous (18) state. Among this group, 64 had recommended discharges, and three were irregular.

An additional 55 terminated their past hospitalizations while their tuberculosis was still active. Of this group, three had recom-



mended discharges, and 52 were discharged irregularly, *i.e.*, because of escape, or for disciplinary reasons, or against medical advice.

*Eastern Oklahoma State Sanatorium*—Forty-seven of the discharges prior to the present readmissions were under an inactive (42) or non-tuberculous (5) status. Among this group, 37 had recommended discharges and ten were irregular. Among the 24 actives, 18 had irregular discharges and six were recommended.

#### Readmission Diagnoses

*Western Oklahoma Tuberculosis Sanatorium*—One hundred twenty-two readmissions were made by 104 different patients during the 12 month period studied. A number of patients had multiple readmissions during the history of their disease. Three patients had three readmissions, 12 had two readmissions, and 89 had one readmission.

Seventy of the 122 readmissions, or 57.4 per cent, were classified as inactive tuberculosis (54) or non-tuberculous conditions (16). Activity was unknown in an additional two patients. Fifty had active tuberculosis, of whom 26 were alcoholics. Of the active cases, one was a documented relapse, and six were probably relapses.

*Eastern Oklahoma State Sanatorium*—Seventy-one readmissions were made by 69 different patients. Two had two readmissions, and for the remaining 67, it was the first readmission.

Thirty-six readmissions, or 50.7 per cent, were classified as inactive tuberculosis (30) or non-tuberculous conditions (6). Among the 35 actives, four were documented relapse cases, and nine were probably relapses.

Figure 1 depicts the readmission diagnoses and the frequencies of each combined for both institutions. In table 2 the age-sex-race distribution of those with active tuberculosis

Figure 1  
READMISSION DIAGNOSIS  
NUMBER OF PATIENTS

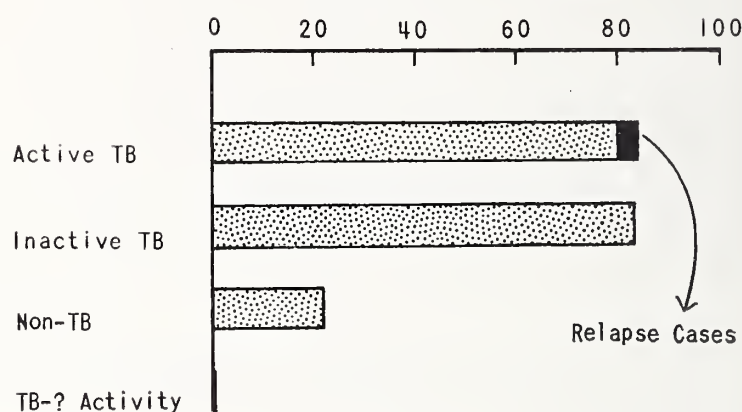


Figure 1

is given. This follows the usual admission pattern seen in most sanatoria.

Patients who were inactive, or found to have non-tuberculous lesions were referred on the basis of suspicious roentgenograms or symptoms suggestive of pulmonary disease. A very important factor leading to referral was the patient's past history of hospitalization in a tuberculosis hospital.

In table 3, the source of referral is given correlated with the status of activity found for each patient.

An occasional patient who was thought to be inactive, and who was given a medical discharge, is included in the group listed as active patients given medical discharges as seen in table 1. In these few instances, a

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Table 2  
Age-Sex-Race Distribution  
of Readmissions with Active TB

Age	Male			Female			Total
	Wh.	Neg.	Ind.	Wh.	Neg.	Ind.	
0-20	1						1
21-40	9			4		4	17
41-60	21	2	7	6	1		37
60+	21	1	2	2	2	2	30
Total	52	3	9	12	3	6	85



Table 3  
Referral Source and Sanatoria  
Diagnoses of Readmissions

Referred by	active	quest. act.	inactive	non-TB	Total
Self referral	9		17	2	28
TB San OPD	15	2	16	9	42
County Health					
Department	18		11	4	33
Private Physician	21		31	5	57
General Hospital	3		4		7
Indian Hospital	1		4	2	7
Court Committal	18		1		19
Total	85	2	84	22	193

routine specimen planted for culture prior to discharge produced colonies after the patient left the hospital.

Several patients were given medical discharges in the presence of active disease, because it was thought that they could be treated satisfactorily as outpatients.

Of the 19 cases committed under the Recalcitrant Tuberculosis Law, 18 had active disease, and one proved to be inactive. These people, alcoholics in most cases, were found to have positive bacteriology and/or roentgenographic instability, yet they refused proper treatment while remaining a health threat toward others.

A few inactive or non-tuberculous patients were referred because of a single positive sputum smear or culture, among several made as an outpatient, which was never verified, or positive on repeat examination at the sanatorium. A complicating factor in this regard is that many different laboratories throughout Oklahoma examine specimens but with varying degrees of competence.

Thus we were able to assess the status of reactivation, or relapse of tuberculosis, by correlating the clinical status of patients at the time of their previous discharge with their interim clinical evaluations based on roentgenographic stability and bacteriologic status.

#### COMMENT

More than one-third of all admissions to Western Oklahoma Tuberculosis Sanatorium, and more than one-fifth of all admissions to Eastern Oklahoma State Sanatorium were readmissions during the 12 month period studied. This would appear to be an inordinately large number who were suffering from a relapse of their tuberculosis. On

closer inspection, however, only 40.9 per cent of the readmissions to Western Oklahoma Tuberculosis Sanatorium, and 49.3 per cent to Eastern Oklahoma State Sanatorium, were found to have active tuberculosis. Further, among those found to have active disease on readmission, the number of patients suffering a documented relapse amounted to two per cent, and 11.4 per cent respectively. Compared to the total readmission group of patients (inactive and non-tuberculous included) only 0.8 per cent at Western Oklahoma Tuberculosis Sanatorium, and 5.6 per cent at Eastern Oklahoma State Sanatorium were documented reactivations.

The results then of our analysis of readmissions is not so disturbing as it would seem at first glance since half of the returning patients are found to have inactive disease or some non-tuberculous condition; yet, the number returning with their disease never having been controlled is much too high. Of this latter group, 76.5 per cent previously had left against medical advice. Thirty-five per cent are alcoholics. A few are psychoneurotic exhibiting various personality disorders. Most of the remainder appear to be persons confronted with socioeconomic problems (*e.g.*, marital, financial) that prove difficult to solve. This precipitates their leaving the hospital and breaks in treatment result.

The role of the tuberculosis hospital continues to change. The average patient's age is 56 years with 64 per cent of them males. Many are single, homeless men addicted to alcohol. On the bright side is the relatively short period of hospitalization that is now required for the initial treatment case. In the coming year we hope to see this period reduced from six to four months.

The "early discharge" program is now being implemented in both sanatoria. This relates to the patient whose sputum cultures convert and chest film begins to show improvement. This policy encourages more ready acceptance of hospitalization along with an increased incentive to take drugs regularly on discharge. To carry out this early discharge program means maintaining a strong sanatorium outpatient department along with well staffed and well equipped tuberculosis clinics in the county health departments. The county chest clinics are



presently supervising tuberculosis chemotherapy for some 1,550 outpatients.

Improvements for committed patients have been made at Western Oklahoma Tuberculosis Sanatorium. This has included remodeling of the lock-up facilities along with additional nursing and security aids for the section. There has been only one escape during fiscal year 1967.

It is noted that many of the readmissions proved not to have active tuberculosis. In the future, it is expected that more of these patients can be evaluated as outpatients.

#### SUMMARY

Among the 657 admissions to Oklahoma's two tuberculosis sanatoria during fiscal

year 1966, 29.3 per cent were classified as readmissions. Of these readmitted patients, 55 per cent were found to have inactive tuberculosis or a non-tuberculous condition. The remainder had active tuberculosis, of which 5.9 per cent (or 2.6 per cent of the total readmission population) were judged to have relapsed while the rest had active disease that had never been controlled. Of the uncontrolled group, 76.5 per cent had previously left the sanatorium against medical advice. □

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### BACK INJURIES LEAD COMPENSATION AWARDS

According to the State Industrial Court, during the period January 1st, 1966 through December 31st, 1967, nearly one-fourth of all Workmen's Compensation awards and settlements were for back injuries. A complete breakdown of the year's 8,001 cases follows:

Arms and Shoulders . . . . .	488	Head . . . . .	310
Ankles and Feet . . . . .	494	Heart Attack . . . . .	175
Abdomen . . . . .	29	Heat Stroke . . . . .	8
Back . . . . .	1,982	Hemorrhoids . . . . .	5
Body as a Whole . . . . .	137	Hernia . . . . .	203
Chest and Ribs . . . . .	294	Hips and Legs . . . . .	1,010
Coccyx . . . . .	9	Jaw and Mouth . . . . .	31
Death . . . . .	183	Neck . . . . .	276
Ears . . . . .	60	Occupational Disease . . . . .	29
Eyes . . . . .	146	Pelvis . . . . .	25
Face . . . . .	139	Spine . . . . .	56
Fingers . . . . .	802	Teeth . . . . .	166
Genitalia . . . . .	12	Thumb . . . . .	198
Groin . . . . .	14	Toes . . . . .	81
Hands . . . . .	639	Total . . . . .	8,001



# An Unusual Triad of Congenital Cardiac Defects

K. S. SHADAKSHARAPPA, M.D.  
JOHN NAUGHTON, M.D.

*A patient with the unusual combination of an atrial septal defect, pulmonary valvular stenosis and coarctation of the aorta who had successful surgical correction of each lesion is presented.*

THE OCCURRENCE of coarctation of the aorta either as a single defect or in association with other congenital cardiac defects is well documented. However, it is apparently quite unusual for a patient to have the combination of a coarctation of the aorta, atrial septal defect and pulmonary valvular stenosis. Recently, a patient was studied with this triad of congenital defects. The results of this investigation constitute the basis of this case report.

## CASE REPORT

B.F.K., an 18-year-old white boy, was referred for evaluation of a heart murmur.

From the Departments of Medicine and Physiology and the Neurocardiology Research Program of the University of Oklahoma Medical Center, Oklahoma City, Oklahoma.

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He was always of small stature and he was occasionally cyanotic on exertion. He noted that during exertion his legs were cold, but he did not have intermittent claudication. The cyanosis was worse with exertion in cold weather than during the summertime. He had recovered from the usual childhood diseases without complications. He performed well in school, but was advised against participating in physical activities because of the heart murmur. He grew up on a farm where he performed a limited amount of routine chores. He did not have paroxysmal nocturnal dyspnea, orthopnea, squatting, pedal edema, clubbing or other problems. His review of systems was otherwise not remarkable.

Physical examination revealed a blood pressure of 140/80 mm Hg in the right arm supine, 148/84 mm Hg in the left arm supine, 100/90 mm Hg in the right leg supine. The pulse rate was 88 per minute. The patient was small, thin and muscular. Examination of the head, eyes, ears, nose and throat was not remarkable. He had a regular sinus rhythm with a left parasternal lift. The PMI was in the fifth intercostal space two cm outside the left midclavicular line. A grade III/VI crescendo-decrescendo systolic murmur was heard along the left sternal border in the aortic area and it radiated into the neck. A grade II/VI systolic ejection murmur also was heard over the



Table 1

Site	Pressures (mm Hg)	Oxygen Saturations (Per Cent)
Superior Vena Cava	—	60.2
Right Atrium, mid	m 8.6	70.8
Right Atrium, low	m 9.0	87.2
Right Ventricle	100/0/14	83.9
Main Pulmonary Artery	31.0/6.0, m 17	84.7
Pulmonary Arterial Capillary	m 8.2	—
Aorta	150/90	98.0
Left Ventricle	170/0/12	98.0
Pulmonary Blood Flow	9.73 L/min	
Systemic Blood Flow	4.15 L/min	
Qp/Qs	2.3/1.0	

The cardiac catheterization data indicated the presence of a left-to-right intracardiac shunt at the atrial level and a mild degree of valvular pulmonary stenosis.

the pulmonic valve of 50-55 mm Hg and a left-to-right intracardiac shunt at the atrial level. The pulmonary blood flow was 9.73 L/min and systemic blood flow 4.15 L/min with a Qp/Qs of 2.3:1.0. A supra-aortic angiogram revealed an area of constriction distal to the left subclavian artery (figure 3) compatible with a coarcted segment of aorta.

The clinical and laboratory findings indicated that the patient had a coarctation of the aorta, an atrial septal defect and a mild degree of pulmonary valvular stenosis. In October, 1965, the coarcted segment of the thoracic aorta was excised through a left thoracotomy with an end-to-end re-approximation of the aorta. The patient recovered

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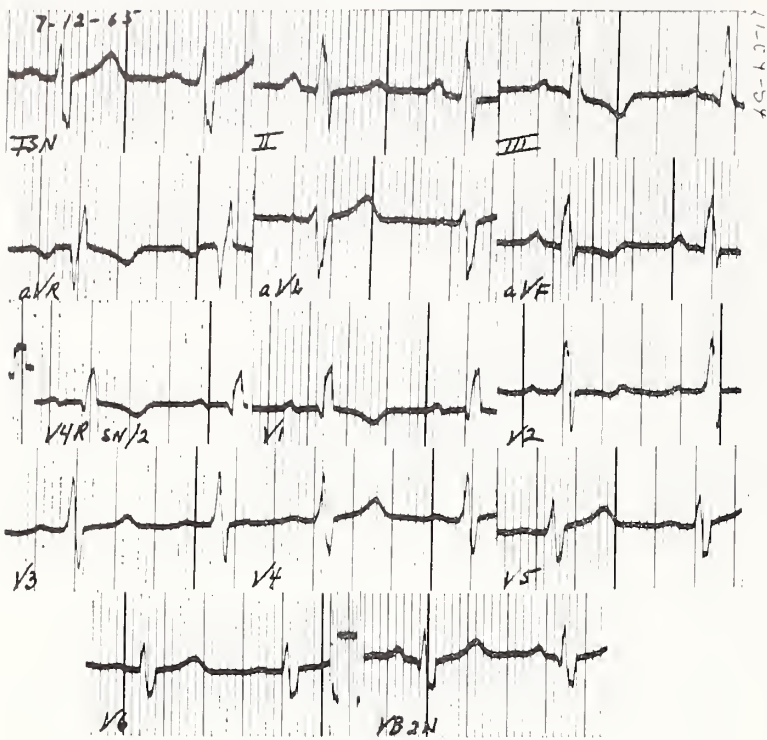


Figure 1. The electrocardiogram revealed incomplete right bundle branch block, right atrial hypertrophy and right ventricular hypertrophy.

pulmonic area. The pulmonic sound was increased in intensity over that of the aortic sound. There was fixed splitting of the second sound. A femoral lag was felt bilaterally and the strength of the femoral pulses was decreased as compared to those of the radial pulses. Abdominal, neurological and neuromuscular examinations were not remarkable.

Laboratory data revealed: hematocrit 42 gms% ; white blood cell count 9,000/cu mm; urinalysis normal; blood glucose 92 mgs% ; blood urea nitrogen 13 mgs% and VDRL negative. An electrocardiogram revealed right axis deviation, a complete right bundle branch block, right atrial hypertrophy and right ventricular hypertrophy (figure 1). A chest roentgenogram revealed prominence of the right cardiac border, an enlarged pulmonary artery segment and evidence of increased flow in the pulmonary circulation (figure 2).

CARDIAC CATHETERIZATION  
AND CLINICAL COURSE

The data recorded during cardiac catheterization (table 1) indicated that the patient had a systolic pressure gradient across



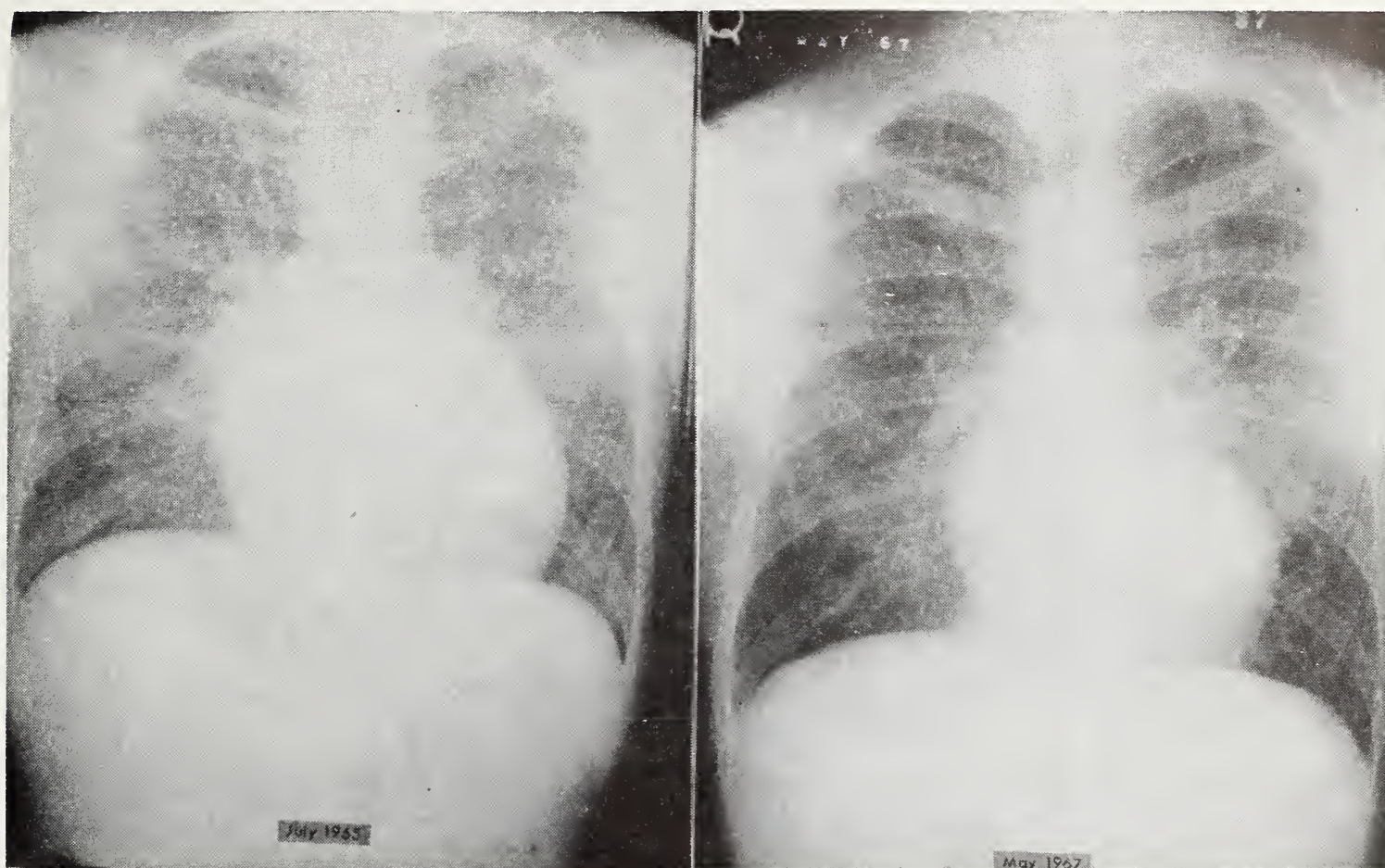


Figure 2. The original PA chest X-ray (left) recorded in July, 1965, revealed generalized cardiomegaly, prominent pulmonary arteries and pulmonary plethora. Approximately two years later, after all of the cardiovascular lesions had been surgically corrected, the cardiac size had decreased (right), the pulmonary plethora had diminished but the pulmonary arteries were still prominent.

from this procedure uneventfully. The lag in femoral pulsations disappeared and the femoral artery blood pressure rose to 130/90 mm Hg. One year later he underwent a second operation during which the atrial septal defect was closed through a median sternotomy. At the second operation the pulmonary artery was opened longitudinally and the commissures of the pulmonic valve were each opened approximately 2.0 mm. There was no infundibular obstruction. He recovered from this procedure without difficulty. A chest roentgenogram approximately one year later revealed reduced plethora of the pulmonary vasculature (figure 2) with a slight reduction in the heart size.

During the ensuing year the patient grew five inches, from 5'6" to 5'11" and gained 15 pounds. The blood pressure in his right upper extremities was 110/65 mm Hg and of the right leg 130/90 mm Hg. His grade II, VI pulmonic ejection murmur was present but the remainder of his physical examination was within normal limits. The electrocardiogram remained essentially unchanged from that originally recorded.

## DISCUSSION

Coarctation of the aorta and atrial septal defects rank high in occurrence among all forms of congenital heart disease.<sup>1, 2, 3</sup> Both occur frequently as isolated defects and in association with other congenital cardiac defects. However, it is apparently quite unusual for them to occur in association with one another and even more unusual to discover a third lesion, pulmonary valvular stenosis, in such an association. Coarctation is often associated with patent ductus arteriosus; stenosis or atresia of a subclavian artery, usually the left; anomalous origin of the right subclavian artery; bicuspid aortic valve; and occasionally with either a ventricular septal defect or mitral regurgitation.<sup>4</sup>

Atrial septal defects have been reported in association with pulmonary valvular stenosis and with such other lesions as aortic valvular atresia, stenosis of pulmonary veins, tetralogy of Fallot, ventricular septal defects, mitral stenosis, and either partial or total anomalous venous return.<sup>5</sup>



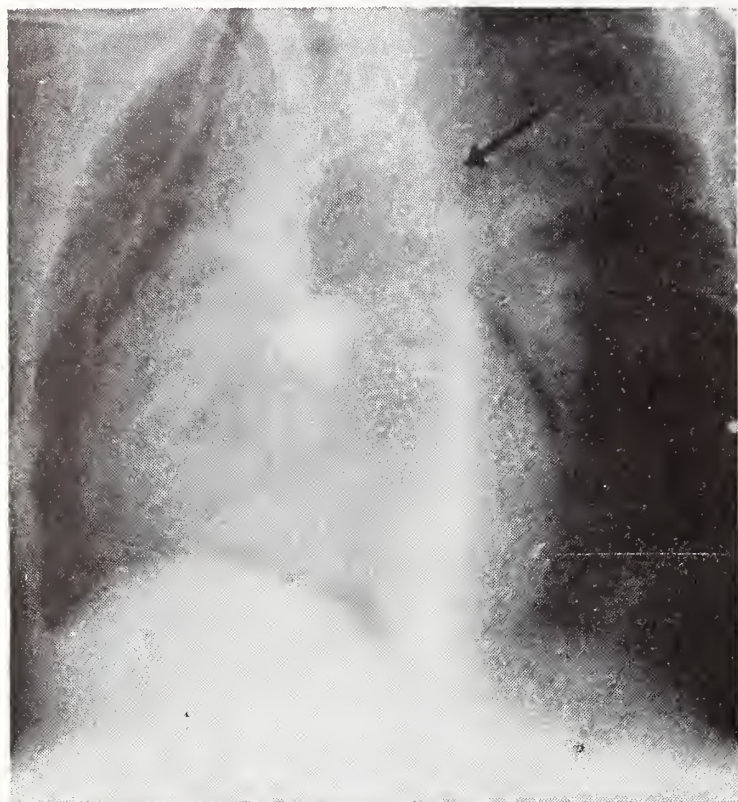


Figure 3. The arrow points to the coarctation of the aorta demonstrated after contrast material was introduced into the root of the aorta. The patient was in the left anterior oblique position.

Although it is difficult to appraise the relative contributions of each of the various lesions in this patient's cardiac status, it might be speculated that the atrial septal defect contributed more than did the pulmonic stenosis, essentially because the systolic pressure gradient across the pulmonic valve was less than 80 mm Hg.<sup>6</sup> Using Zaver and Nadas' criteria, this patient's atrial septal defect was probably 1+ because of the associated findings of an increased heart size with pulmonary plethora; electrocardiographic evidence of right axis deviation; symptoms of fatigue and dyspnea; and a Qp/Qs of 1.5 to 3.0.<sup>7</sup> It is difficult to ex-

plain his cyanosis except to relate that since it usually occurred during exertion, there may have been some bidirectional shunting at the level of the atrial septal defect. This finding did not recur postoperatively.

The presence of these three defects in a single patient required two surgical approaches. It was elected to repair the coarctation first since the patient was hypertensive and it was thought that this lesion was producing the greater hemodynamic load on the myocardium. After he recovered, the atrial septal defect was closed and the pulmonary valve commissures were incised. Despite apparent hemodynamic improvement following resection of the coarctation the patient did not grow or gain weight until the right-sided cardiac defects were corrected. Following the second operation he had a growth spurt, gained weight and was asymptomatic. He subsequently returned to an essential normal life status and pursued his studies as a college student.

#### SUMMARY

An 18-year-old boy had the unusual combination of coarctation of the aorta, atrial septal defect and pulmonary valvular stenosis. These lesions were repaired by two surgical procedures; the coarctation first, and the other two one year later. □

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PLAN TO ATTEND . . .

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# History of the Oklahoma State Dermatological Society

MARK ALLEN EVERETT, M.D.

*Nineteen hundred sixty-eight is the fortieth anniversary of the Oklahoma State Dermatological Society. The history of this specialty is traced for the years 1928-1968.*

FRIDAY 18 MAY, 1928 was cloudy, wet, and windy. Heavy rains during the preceding week made many roads impassable. In spite of inclement weather over 500 physicians gathered in Tulsa for the annual state medical meeting.<sup>1</sup> At noon that day, seven dermatologists from Oklahoma City and Tulsa<sup>†</sup> met in the Mayo Hotel for the purpose of organizing a state dermatological society. At this luncheon meeting, Everett S. Lain of Oklahoma City was elected President. James Stevenson and C. J. Woods of Tulsa were elected Vice-president and Secretary-Treasurer, respectively. The officers were instructed to prepare a constitution and by-laws for the society. It was agreed that requirements for membership would include at least one year postgraduate training in dermatology together with a requirement that the applicant's practice con-

sist of at least 60 per cent skin diseases.\* Minutes of the meeting indicate an intention to hold three meetings annually—during the Oklahoma State Medical Association and again in October and January.

A constitution and by-laws were adopted at the second meeting held in Oklahoma City 13 October, 1928. Dues were set at \$2.00 annually. Two additions to the membership rolls were made.\*\*

## FORMAT FOR MEETINGS

Although the constitution required three meetings annually, a January meeting was held only in 1930. In other years only one or two meetings took place. Usually, case presentations were given at one of the local hospitals. This was followed by luncheon or dinner. At the first meeting, held with the OSMA in Oklahoma City Tuesday, 28 May, 1929, a clinic under the direction of Doctor Bondurant was held at Oklahoma City General Hospital (now Mercy) from 10 to 10:30 a.m. This was followed by a clinic under the direction of Doctor Lain at the then new University Hospital from 11:30 a.m. until noon. At 2:00 p.m. a series of papers were presented at the medical school. Ordinarily, formal papers were presented only at section meetings of the state association. At other times, there was only an informal discussion of cases or, when a guest was pres-

\*These qualifications were the subject of great debate during 1929-1934. Apparently several men who did not meet these criteria had powerful friends interested in obtaining society membership for them.

\*\*Doctors W. A. Showmann and C. L. Brundage.

<sup>†</sup>Doctors E. S. Lain, M. M. Roland, C. P. Bondurant, W. E. Eastland, J. M. Stevenson, H. Green and C. J. Woods.



## *Dermatology* / EVERETT

ent, a special address at the luncheon or dinner. The number of patients presented was variable but frequently considerable. The minutes mention 43 cases presented at the Children's Hospital in 1934!

Thus, with few exceptions, every year since 1928 the Oklahoma State Dermatological Society has held its annual meeting in April or May. This was with the OSMA when the latter met in Tulsa or Oklahoma City. Cases have been always presented. In most years, an October or November meeting has been held, usually in Oklahoma City. Since 1955 patients have rarely been presented at the autumn session which has been held at the time of the Oklahoma City Clinical Society sessions. On these occasions there were featured a speech by a guest dermatologist and a dinner. On three occasions, special meetings with case demonstrations have been held to honor distinguished visiting dermatologists: in June, 1939 for Doctor Fred Weidmann of Philadelphia; May, 1959 for Doctor A. C. Curtis of Ann Arbor; and July, 1960 for Doctor W. Jadassohn of Geneva, Switzerland.

### RELATIONSHIPS WITH THE OKLAHOMA STATE MEDICAL ASSOCIATION

Although the society was organized at an annual meeting of the OSMA and the principal meeting was ordinarily held at the time of the OSMA meeting, the relationship between the two organizations was not always congenial. As early as 1932, the dermatology society petitioned the state medical association "to make separate sections for the dermatologists and urologists."\* For many years OSMA had a section on "Urology and Syphilis" at the annual meeting. Both dermatologists and urologists attended this section and officers alternated between the two specialties. The mutual interests of the two groups were not sufficient by 1929 so, in that year, the dermatologists held their meeting on the day before the OSMA clinical sessions. Dermatologists did not meet with the OSMA from 1929-1931. In 1932 a separate section of dermatology and radiology was created but in 1933, 1934

and 1935 dermatology was recombined with urology. Within the framework of the OSMA, dermatology was recognized as distinct from urology in 1936. From 1936 to 1946 a section on dermatology and radiology was held at the state meeting and in 1947 separate specialty sections were largely abandoned.

In summary, during the period 1932-1936 the state dermatologists urged creation of a section separate from urology and they did not meet with the state society again until 1939.\*\* Radiology was considered inseparable from dermatology until after World War II. This doubtless was due to the prominent role assumed by dermatologists in radiation therapy. In those years diagnostic radiology had not assumed a large independent role.

Since 1947, dermatological subjects have been presented at the general medicine section of the OSMA while the dermatological society case presentations and meetings have been either immediately before or after the general sessions.

Members of the state dermatological society have always worked at various tasks within the OSMA, which included chairing sections and committees such as those on *Cancer Study and Control* and on *Veneral Disease*.

### RELATIONSHIPS WITH OTHER SOCIETIES

At various times, relationships with two other dermatological societies were the subject of discussion. On many occasions, exchange meetings with the Texas Dermato-

\*\*The minutes of 15 May, 1935 state, "The regular clinical sessions were not held owing to a disagreement in policy of holding clinics in connection with the state association."

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*Mark Allen Everett, M.D., graduated from the University of Oklahoma School of Medicine in 1951, where he is now Professor and Chairman of the Department of Dermatology. He is certified by the American Board of Dermatology. Among his medical affiliations are the American Academy of Dermatology, the Oklahoma State and Oklahoma City Dermatological Societies, the Society of Investigative Dermatology, the American Dermatological Association and the World Medical Association.*

\*Minutes 2 November, 1932 and 16 May, 1933.



logical Association were voted. However, such joint gatherings never occurred. From 1937 to 1940 the minutes referred to the Mississippi Valley Dermatological Association but the exact relationship of this organization to the Oklahoma State Medical Association is not clear. A "petition for admission" to the Missouri Valley Association was made 25 April, 1931.

On 18 November, 1938 the Southern Medical Association met in Oklahoma City and the state dermatological society was host to the section on dermatology. The attendance was large because a number of visitors came directly from St. Louis where the American Academy of Dermatology had been held. Costs to the society included \$73.75 for "refreshments," \$137.90 for the banquet, and \$32.20 for orchestra and flowers!\*

INVITED GUESTS

Many distinguished dermatologists have been guests of the society. Among these were Richard Sutton, Jr. (1928, 1935, 1960 and 1966), K. C. Dennie (1930 and 1932), Howard Fox (1931), Fred Weidmann (1937 and 1939), Arthur Curtis (1959), Werner Jadassohn (1960) and Hamilton Montgomery (1961). Many more outstanding men were honored speakers as joint guests of the dermatology society and either the state medical association or the Oklahoma City Clinical Society.

\*Minutes 2 May, 1939.  
\*\*Records exist for only 1959-1962. No prize was awarded after 1962. Winners listed were: John Penrod (1959); Robert Bell (1960); Ernest Daifer and James Miller (1961); and James Garner (1962).

ANNUAL ESSAY AWARD

On several occasions\*\* the society has awarded a cash prize to a student or resident-in-training for original investigation. An essay was presented by the honoree at the spring luncheon meeting. This award was highly regarded by all recipients.

CONCLUSION

The Oklahoma State Dermatological Society has completed 40 years of continuous activity. From the beginning the society has functioned not as a restricted organization but as a gathering place and spokesman for every dermatologist in Oklahoma. The group has been active in encouraging high standards of practice and continuing education for all dermatologists. Further, it has taken a leading role in gaining respect and autonomy for dermatology within the framework of the state medical association. Prizes for students have attracted outstanding men to the specialty and the sponsorship of honored guests has broadened dermatological knowledge of both resident and physician. In future years the Oklahoma State Dermatological Society will continue its leading role on behalf of high standards and proper recognition for dermatology within the evolving framework of medicine in the United States. □

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AMA APPROVED SCHOOLS OF MEDICAL TECHNOLOGY WELCOME  
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# Ectopic Pregnancies— Review of 48 Cases

GARY F. STREBEL, M.D.

*A retrospective survey of forty-eight patients with ectopic pregnancy treated at the University of Oklahoma Hospital from 1960 to 1965 is presented. This incidence, clinical symptoms and signs, and the treatment and results are compared with the current literature.*

## INTRODUCTION

**E**CTOPIC PREGNANCY was first described by Albucasis in the eleventh century,<sup>19, 22</sup> but the first authentic report of a case of salpingeal pregnancy with the classical symptomatology of rupture was recorded in 1616 by Riolan (1577-1657), a surgeon and anatomist of Paris. He reported the case of a woman, 31 years old, who had been pregnant eight times. During the fourth month of her last gravidity, she developed a sudden sharp pain about the pelvis which radiated to the chest. This attack occurred on January 2, 1604. The pain remained excruciating all night and she died the following day.

At autopsy, Riolan found the right tube contained a foetus, while the uterus appeared normal.<sup>19</sup> Since that time, this diagnosis has presented a serious and often perplexing problem to all physicians to make this diagnosis.

Ectopic pregnancy remains an important entity in obstetrics and gynecology today. From 1960 to 1964, according to the U.S. Department of Health, Education and Welfare, there were 493 maternal deaths due

to this cause.<sup>28</sup> In Oklahoma, there have been six deaths between 1960 and 1965 associated with ectopic pregnancies and a total maternal mortality of 109 cases. This means that 5.5 per cent of the maternal deaths were due to this cause. In reviewing the six reported cases in Oklahoma, all but one were classified as preventable.<sup>24</sup> In the United States, we can be proud because each year the mortality rate is decreasing, even with an increasing rate in the number of ectopic pregnancies.<sup>2, 3, 10, 26, 29</sup>

## MATERIALS AND METHODS

This paper reviews the ectopic pregnancies at the University of Oklahoma Hospital from 1960 through 1965. There have been 48 consecutive cases of ectopic gestation treated without a single death. Forty-two of these cases were treated by the Gynecology-Obstetrics Department and six by the Department of Surgery. Patients seen at the University of Oklahoma Hospital are greater than 90 per cent non-private-educational. The University of Oklahoma Hospital is the only referral hospital for the State of Oklahoma. It has a rather small, inactive emergency room but a large outpatient and inpatient service load. With the aid and cooperation of the State Health Department, record librarians, and record departments of the major hospitals in the Oklahoma City area, additional data are presented in this paper relating to the incidence of ectopic gestation for the entire Oklahoma City area.

## INCIDENCE

The true incidence of ectopic pregnancy is difficult to ascertain. It has been reported



Table 1  
Oklahoma City Hospitals

Name	1960	1961	1962	1963	1964	1965	Total
University	2,400 ( 4)	2,176 (11)	1,797 ( 9)	1,862 (11)	1,541 ( 9)	1,528 ( 4)	11,304 ( 48) 1:235
St. Anthony	3,707 (30)	3,819 (24)	3,916 (28)	3,614 (20)	3,619 (18)	2,399 ( 9)	21,074 (129) 1:163
Mercy	1,416 ( ?)	1,350 ( 6)	1,345 ( 5)	1,041 ( 2)	1,161 ( 9)	1,007 ( 9)	7,320 ( 31) 1:190
Presbyterian	1,124 ( 7)	1,020 ( 5)	973 ( 1)	893 ( 2)	835 ( 2)	717 ( 5)	5,562 ( 22) 1:253
Baptist	1,078 ( 1)	1,239 ( 0)	1,486 ( 1)	1,709 ( 0)	1,778 ( 0)	1,786 ( 0)	9,076 ( 2) 1:4538
Deaconess	814 ( 1)	803 ( 0)	852 ( 0)	849 ( 1)	829 ( 2)	692 ( 2)	4,839 ( 6) 1:806
Hillcrest	299 ( 0)	281 ( 2)	282 ( 0)	239 ( 0)	239 ( 0)	245 ( 1)	1,585 ( 3) 1:528
Capitol Hill	563 ( 1)	477 ( 0)	435 ( 0)	341 ( 1)	289 ( 0)	242 ( 0)	2,347 ( 2) 1:1173
Midwest City				744 ( 3)	753 ( 5)	726 ( 5)	2,223 ( 13) 1:171
	11,401 (44)	11,165 (48)	11,086 (44)	11,292 (40)	11,044 (45)	9,342 (35)	65,330 (256) 1:255

Note: The numbers in parentheses represent ectopic pregnancies. The other numbers represent deliveries.

as low as one in 303 pregnancies<sup>22</sup> and as high as one in 80 pregnancies.<sup>16</sup> These figures differ with social, economic and racial factors as well as geographical area. Anderson in Baltimore<sup>2</sup> reported one in 200 pregnancies in white women and one in 120 pregnancies in non-white. The total number of live births in the major hospitals in Oklahoma City is compared with the number of reported ectopic pregnancies for the same period of time (see table 1). During this time, the number of births has been relatively stable until 1965 when it began to decline. There has been some shifting in the number of deliveries among the hospitals, but the number of ectopic pregnancies compared to the number of live births has been essentially unchanged. The highest rate in 1961 of one in 233 compared to the lowest rate in 1965 of one in 266, is not statistically significant ( $P = .05$ ). The overall ectopic pregnancy rate for the area during these six years was 1:255 live births and for the University of Oklahoma Hospital, 1:235. This incidence is much lower than most recent studies indicate.<sup>2, 3, 5, 8, 9, 29</sup>

#### RACE

Of the 48 cases, 31, or 64.6 per cent, were in white women and 17, or 35.4 per cent, were in non-white women. Obstetrical admissions during this time were 60 per cent non-white. There is no apparent explanation for this radical difference. It may be important that approximately one-fourth of the total

non-white deliveries in Oklahoma occur at the University of Oklahoma Hospital.

#### HISTORY

Ages ranged from 14 to 44 years with an average of 28.4 years. Approximately 80 per cent were between 20 and 35, the normal childbearing period.

Almost 88 per cent had been pregnant from one to nine times (see figure 1). The average for the total group was 3.22. Contrary to the usual history of relative infertility,<sup>18</sup> over one-third of our cases had four or more previous pregnancies.

The cardinal signs and symptoms of ectopic pregnancy are pain, bleeding and amenorrhea. Of this triad, the most frequent presenting complaint is pain. It was present in all of our cases. There are two types

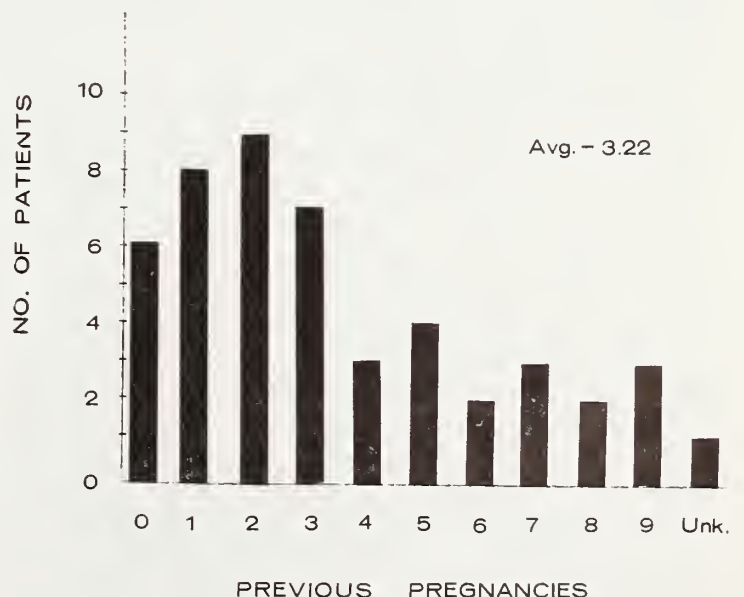


Figure 1



of patients with respect to pain. Approximately 30 per cent had sudden onset of pain of less than 12 hours duration. These have been called the "acute rupture" type and usually have an acute abdomen, hypotension and tachycardia.<sup>14, 21, 29</sup> This was substantiated in our patients. The second type or "chronic rupture" have intermittent or constant low abdominal pain for several days before the diagnosis is made and usually are not so acutely ill as the former group.

The second most common presenting complaint is abnormal uterine bleeding, which was observed in approximately 70 per cent of our cases. Approximately 44 per cent had bleeding or spotting for longer than ten days. Only seven patients denied abnormal uterine bleeding and it was not recorded in another seven patients.

The third part of the triad is amenorrhea which was present in approximately 68 per cent of our patients. Ten of the 48 patients denied amenorrhea. The duration of amenorrhea appears with a biphasic distribution, at eight and 12 weeks. This may only reflect the practice of referring to menstrual periods in terms of months rather than weeks.

Dizziness or light-headedness was seen in 27 (56 per cent) of our patients. Syncope occurred in approximately one-fourth of these and shoulder pain in another one-fourth. Pain on defecation or urination was present in only two cases. These figures resemble most other reports except for the bathroom sign which is usually reported by ten to 20 per cent.<sup>3, 10, 14, 24</sup>

The past history is important. Approximately 48 per cent have had previous pelvic inflammatory disease. This is consistent with most studies and according to most authors, is the most important single factor in the etiology of ectopic pregnancy. Approximately 30 per cent of our patients had some type of previous surgery (see table 2). There were six patients with a previous ectopic pregnancy. Two patients had previous surgical manipulation of their oviducts and subsequently had an ectopic pregnancy. The tubal ligation of unknown type had been done 18 months previously.

Table 2  
PAST HISTORY

	No. of Pt.	Per Cent
Pelvic Inflammatory Disease	23	47.9
Previous Surgery		
Appendectomy	5	
Previous Ectopic (tubal)	4	
Abdominal Pregnancy	2	
Tubal Ligation	1	
Tubal Ligation with Tuboplasty	1	
Exploratory Laparotomy for PID	2	
	15	31.2

PHYSICAL EXAMINATION

Few physical findings are consistently helpful in the diagnosis of ectopic pregnancy.

Temperature elevation is not a prominent part of the clinical findings. Six of our patients, however, did have a temperature of 100.4 or greater. Hypotension or cardiovascular shock was seen in nine patients, or 18 per cent. Abdominal tenderness of varying degree, usually in the lower abdomen, is probably the most consistent physical finding. This has been reported in 80 to 100 per cent of cases. Unfortunately in our series, this information could not be obtained. A pelvic mass was present in 19 (40 per cent) of the patients and this also is very difficult to evaluate due to several different examiners in our series. Pain with movement of the cervix is almost always present in ectopic pregnancies<sup>4, 11, 13, 18</sup> but it must be differentiated from other causes such as acute pelvic inflammatory disease or a hyper-reacting patient. There is an enlarged uterus in one-third to one-half of the cases.<sup>9, 11, 16</sup>

The most rewarding part of the physical examination is the culdocentesis. The culdocentesis was positive in 96.9 per cent of 33 cases attempted. It was negative only once. Of the 15 patients who did not have a culdocentesis, six were treated by the Department

*At the time this paper was written, Gary F. Strebel, M.D., was a first year resident in Obstetrics and Gynecology at the University of Oklahoma School of Medicine, where he graduated in 1965. He is now with the United States Air Force at Wilford Hall Hospital in San Antonio, Texas in the Department of Obstetrics and Gynecology.*



of Surgery. Three had culdoscopy and in the others, it was not considered essential to the diagnosis.

LABORATORY EXAMINATION

The laboratory is of limited value in making the diagnosis. In the majority of cases the hematocrit was greater than 30 per cent. In only six of 48 cases was the hematocrit 20 per cent or less. The range was from 13 per cent to 43 per cent. In 75 per cent of patients, the white blood cell count was below 15,000/cm. The range was 3,800 to 38,000 per cubic millimeter.

Other tests include a positive pregnancy test in four of eight patients tested and a sedimentation rate greater than 30 mm in seven patients tested. Some authors have used hysterosalpingography to make the diagnosis. This was not done in our series.

DIAGNOSIS

The initial impression was correctly given as ectopic pregnancy by the initial examiner in 54 per cent of the cases. The admitting diagnoses are shown in table 3. Procedures that may help establish the diagnosis are examination under anesthesia, culdoscopy or posterior colpotomy.<sup>11</sup>

SURGERY

Ectopic pregnancy is an emergency and one should proceed rapidly to surgical treatment. Over 70 per cent of our patients were operated immediately or less than 12 hours after admission. Five patients were hospitalized over four days before surgery, the longest was eight days.

Table 3  
ADMISSION DIAGNOSIS

Ectopic Pregnancy . . . . .	26
Pelvic Inflammatory Disease . . . . .	5
Pelvic Mass . . . . .	5
Intra-Uterine Pregnancy . . . . .	3
Ovarian Cyst . . . . .	2
Kidney Stone . . . . .	1
Perforated Ulcer . . . . .	1
Appendicitis . . . . .	1
Acute Abdomen . . . . .	1
Incomplete Abortion . . . . .	1
Threatened Abortion . . . . .	1
Broad Ligament Hematoma . . . . .	1

48

Table 4  
TYPE OF OPERATIVE PROCEDURE

Unilateral Salpingectomy . . . . .	27
Unilateral Salpingo-Oophorectomy . . . . .	10
TAH and BSO . . . . .	2
TAH and LSO . . . . .	1
TAH with Unilateral Salpingectomy . . . . .	2
Right Salpingectomy and Tuboplasty . . . . .	1
Right Salpingectomy, Appendectomy, and D&C . . . . .	1
Left Salpingectomy and Appendectomy . . . . .	1
Right Oophorectomy (1° Ovarian) . . . . .	1
Bilateral Salpingectomy and Left Oophorectomy . . . . .	1
Suture of Uterosacral Implantation Site . . . . .	1

48

In recent years, attention has been placed on preserving the oviduct and the potential for childbearing.<sup>17, 20, 23, 27</sup> Many authors recommend salpingostomy, partial salpingectomy, only hemostatics and other conservative operations for this disease.<sup>17, 20, 23, 26</sup> None of these conservative procedures was used in this series (table 4).

Fifty-six and three-tenths per cent of the ectopic pregnancies were on the right side. Many series report an increased incidence on the right.<sup>4, 6, 10, 11</sup> This has been explained by chronic peri-appendicitis or a previously ruptured appendix resulting in adhesions and altered anatomy of the tube and ovary. Also, a person with unilateral right-sided pain is more likely to be operated than one with unilateral left-sided pain.

Over 80 per cent received blood transfusions. The range was one to six units with an average of three units. No transfusion reactions occurred.

There were 19 (40 per cent) postoperative complications (table 5). All of these were morbid except one congestive heart failure and an acute pyelonephritis. Eighty-five and four-tenths per cent of the patients had a temperature greater than 100.4 degrees during their hospital course. Sixty-two per cent received antibiotics.

PROGNOSIS

The prognosis for patients with an ectopic pregnancy is excellent as far as mortality is concerned, and fairly good with respect to morbidity and subsequent ability to become pregnant. Abrams and Farell<sup>8</sup> report a conception rate of 50 per cent and a 25 per cent incidence of a second ectopic pregnancy among those who conceive. Since



Table 5  
POST OPERATIVE COMPLICATIONS

Pyelonephritis . . . . .	3	
Pyelonephritis and Atelectasis . . . . .	1	
Pyelonephritis and CHF . . . . .	1	
Pyuria . . . . .	3	
Cystitis . . . . .	2	
Pneumonia . . . . .	2	
Pneumonia and Atelectasis . . . . .	1	
Peritonitis . . . . .	2	
Pharyngitis . . . . .	2	
Endometritis . . . . .	1	
Thrombophlebitis . . . . .	1	Per
	—	Cent
	19	(39.5)

there is a fairly good chance of future pregnancies, it is important to approach the problem with prompt conservative surgery and supportive measures for a good outcome.

DISCUSSION

The incidence of ectopic pregnancy for the area reported is less than that in most previous reports.<sup>3, 5, 9, 12, 29</sup> In particular, the incidence for the non-white population at the University Hospital is approximately 1:400 live births when calculated for the proportion of non-white patients treated there. This is a significant decrease from the reports of Anderson,<sup>2</sup> Beacham,<sup>5</sup> and others.<sup>12, 29</sup> An explanation for this may be due to a select group of patients because of the small, inactive emergency room and the referral system at the University Hospital. Possibly the non-white, acutely ill, clinic patient goes to larger, more active emergency rooms. In this study the highest overall incidence of ectopic pregnancies was in those hospitals with the larger, more active, acute emergency wards.

Most authors find an increase in the ratio of ectopic pregnancies compared to live deliveries.<sup>2, 5, 9, 12, 30</sup> Their explanations have been early treatment of acute pelvic infections that leave the fallopian tube patent but physiologically and anatomically abnormal. If these reports are true, several factors might explain this difference: first, failure to make the correct diagnosis and conservative management as one would with a pelvic abscess or in treating acute pelvic inflammatory disease; second, ineffectual treatment of acute pelvic inflammatory disease so that

complete sterility develops; and third, early and effective treatment of acute pelvic inflammatory disease so that chronic salpingitis does not occur.

An important fact is that multiparity does not exclude the possibility of ectopic pregnancy. Most studies reveal a high incidence of absolute or relative sterility<sup>18</sup> which leads one to conclude that ectopic pregnancy and a "highly fertile female" are usually not associated. However, in this series that conclusion is invalid because 14 of the 48 patients had more than four previous pregnancies.

The culdocentesis done in the outpatient clinic or emergency room has proved to be the most important diagnostic procedure. This can be done without anesthesia or special apparatus by using a speculum, tenaculum, antiseptic solution, and a No. 18 gauge spinal needle with syringe. Complications are rare; and when compared with the value and simplicity, it is apparent why the culdocentesis has been used so extensively. Culdoscopy, or colpotomy both require hospitalization and anesthesia but they offer visualization of the lesion in approximately one-third of the cases and the possibility of correction through the vaginal route. Culdoscopy or colpotomy are especially valuable for those "chronic" or unruptured cases of ectopics,<sup>7</sup> but should never be used in acutely ill patients or those in shock. Culdoscopy requires considerable experience before an adequate examination can be performed, thereby restricting its use as a diagnostic aid.

The primary treatment of this disease is surgical, and the objective is to remove the products of conception and control the hemorrhage. The choice of operative procedure depends on the age and condition of the patient, location of the products of conception, the patient's attitude toward further pregnancies, the condition of the opposite oviduct, and other uterine pathology. This can be assessed only at the time of surgery by the surgeon, but in general the more conservative procedures are recommended.<sup>26</sup> Shock is not a contraindication to surgery, and the operation should be performed as soon as possible while whole blood is being administered.

The prognosis in this disease is excellent with modern treatment. The mortality rate



is less than one per cent in a series of 1,805 cases over a 50 year period reported by Beacham and Beacham from Charity Hospital in New Orleans, Louisiana. Figure 2 shows some factors believed responsible for their excellent management of this disease.

SUMMARY

A careful and accurate history, as with most diseases, is one of the most valuable aids in correctly diagnosing an ectopic pregnancy. The physical findings may vary from minimal abdominal tenderness to profound cardiovascular shock or coma. Culdocentesis cannot be over-emphasized as an aid in diagnosis. Whole blood transfusions not only decrease mortality but shorten convalescence. The treatment is prompt, conservative surgery.

There is no pathognomonic sign or symptom for the diagnosis of ectopic pregnancy. In a woman in the childbearing age who has abdominal pain or tenderness, one must have a high index of suspicion, and procrastination or neglect only increases the morbidity and mortality rate.

Ectopic gestations were reviewed with the following conclusions:

- 1. During the years 1960 through 1964, for which data are available, ectopic pregnancy was reported as the cause of death in 493 persons in the United States.
- 2. In Oklahoma, ectopic pregnancies accounted for 5.5 per cent of the total maternal mortality.
- 3. In the Oklahoma City area, the ectopic pregnancy incidence was 1:255 live births.

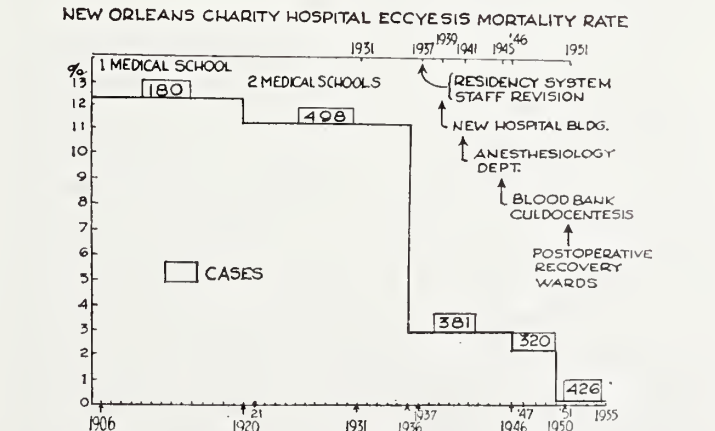


Fig. 8.—Factors resulting in the most favorable changes in the uncorrected mortality rate include: the two medical schools, residency system and staff revision, modern hospital building, anesthesiology department, culdocentesis, blood bank, and better postoperative care.

Figure 2. From Beacham, et al.: American Journal of Obstetrics and Gynecology, 72: 830-843, 1956, The C. V. Mosby Company, St. Louis, Missouri.

- 4. Only one-third of 48 cases were found in non-whites at the University of Oklahoma Hospitals.
- 5. Pain, bleeding, and amenorrhea are the symptoms most commonly associated with ectopic pregnancy.
- 6. A history of previous pelvic inflammatory disease appeared in 50 per cent of the cases and probably is the most important factor in the etiology of this disease.

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## ABSTRACTS

### DEVELOPMENTAL FACTORS IN ANTIMICROBIAL THERAPY

Developmental factors in the infant play an important role in the host defense mechanism and response to drugs in antimicrobial therapy. In this very interesting article the author reviews some of these factors. The infant or child is a developing individual whose response to disease and drugs is dependent upon varying maturational factors, body size and surface area, drug metabolism, and clinical response. In the infant and child there may be a relative lack of response systemically to overwhelming bacterial infection with normal or subnormal temperature and no leukocytosis. Derangements of fluids and electrolytes are frequent (and complicated by immature renal and hepatic function). In the infant the average total fluid exchange of 700 ml. represents 50 per cent of the extracellular fluids. There may be different causative agents of disease of different ages—an example used was that of purulent meningitis, the newborn infant being susceptible to *E. coli* as antibodies to this organism are poorly transmitted across the placenta and the infant has no passive immunity; likewise he has a high degree of exposure to this organism. At birth the infant has a high titer of antibodies against *H. influenzae*. Between the ages of six months and four years, however, meningitis is likely to be due to *H. influenzae*.

The degree of development is important in gastrointestinal absorption of drugs, membrane permeability, protein binding, enzyme processes, as well as drug distribution and breakdown.

Sulfonamides were used in neonatal bacterial infections until 1956 when it was demonstrated that sulfonamides could uncouple bilirubin from protein and render it diffusible through membranes thus making the child susceptible to kernicterus. This was found to have occurred clinically when death rates of infants over 72 hours old were studied. Accordingly, long acting sulfonamides also should not be given expectant mothers in the period prior to delivery.

There is a great difference in metabolism of penicillin G with newborn infants who have only one-fifth the renal clearance of older children. Oral penicillin is more effective in the newborn because of decreased gastric acidity. Potassium penicillin contains 1.6 meq K/1 million units and therapeutic adult doses can cause hyperkalemia.

Chloramphenicol has had toxic effects due to the infant's deficiency in being able to conjugate the drug and decreased renal excretion. Safety cannot be predicted on a basis of dose-weight.

Tetracycline has been shown to have many adverse metabolic effects. In premature infants giving this drug from nine to 12 days has been shown to produce a 30 to 60 per cent decrease in bone growth.

Other drug effects have been cited—streptomycin in infants and young children may cause stupor, flaccidity, and even coma. Novobiocin has been associated with jaundice and it has been shown to decrease the ability of the liver to excrete bilirubin. Kanamycin, on the other hand, is a comparatively safe drug in children compared to its toxic effects in adults.

**Reviewer's Note:** This article is well written, quite

interesting, and emphasizes again the importance of being aware of the human's continued development after birth.—*Carman Bloedow, M.D.*

The Influence of Developmental Factors in Antimicrobial Therapy. Harris D. Riley, Jr., M.D., *J. of Clinical Pharmacology*, 7(6): 312-318, 1967.

### MIGRATION OF HEALTH PERSONNEL

For those who read Spanish, this article is an excellent short review of the findings of the PAHO Subcommittee on migration of health personnel from Latin America to the United States.

From 1960-1965 approximately 4,000 persons from Latin America with a university education entered the U. S. with immigration visas. About three-fourths of these would become permanent immigrants. Estimating an expenditure of \$20,000 for the educational training alone of each of these persons the loss would be some \$60 million. From 1961-1965, 19,100 Latin Americans with more than a college degree entered the U. S., some 500 plus were physicians. If the number of Cuban physicians is excluded from these figures, approximately five per cent of the annual production of physicians has been immigrating to the U. S., the loss varying from country to country. Cuba, Haiti and the Dominican Republic have lost each year the equivalent of the number of new physicians trained; on the other hand, Brazil has lost less than one per cent.

Almost all the physicians who have immigrated to the U. S. have worked as interns or residents. About half of the Latin American physicians coming for postgraduate education have remained here permanently. Nevertheless, many Latin Americans who are in an academic career in the U. S. as investigators or professors have expressed an interest in returning to South America if offered an opportunity to continue their career. They have expressed a desire to work in Latin America despite decreased salaries and resources, but they demand a certain minimum of economic or political stability.

The causes and effects of these migrations vary from country to country. One interesting finding—the countries most preoccupied with these losses had had fewer losses than those countries with less awareness of the existence of this problem.

The study concludes with some recommendations—recognizing that the countries themselves can most effectively decrease the emigration. They can strengthen their academic centers, improve scientific organization by establishing vigorous national organizations of investigation, and improve their planning for studies outside the country. The study recognizes that a certain level of migration is normal and desirable. The data and information gathered in this study can be of great help in planning the development of better local facilities so the countries can retain a higher percentage of their highly trained personnel.—*Carman Bloedow, M.D.*

Migration of Health-Related Personnel, Scientists and Engineers from Latin America. (A review.) Kelly M. West, M.D., *Educacion Medica and Salud*, 1: 244-246, 1967. □



# Books As Clinical Tools

## CLINICAL REFERENCES ON ADOLESCENT MEDICINE

PAXTON HOWARD, JR., M.D.

Someone said that there are doctors who are interested in diseases and doctors who are interested in people. The physician who cares for adolescents must be one of the latter. This philosophy is clearly presented by J. Roswell Gallagher, until recently Chief, the Adolescents Unit, Children's Hospital Medical Center, Boston. In *The Medical Care of the Adolescent*,<sup>1</sup> Gallagher explains the rationale for the development of both special facilities for and a special approach to the adolescent patient. After a review of normal adolescent growth and development, he presents his approach to the various medical and emotional problems of the adolescent. Chapters of special interest to the general physician include scholastic failure, sex and social policy, obesity, menstrual disorders, athletic injuries and common orthopedic problems. Pediatricians or internists will appreciate chapters on the thyroid, diabetes, ulcerative colitis, malignant tumors and epilepsy. This excellent book will be valuable to all physicians who care for adolescents.

An increasing interest in adolescent patients is reflected in two recently published symposia. The symposium in *Pediatric Clinics*<sup>2</sup> is particularly good on developmental and psychological problems. The *Medical Clinics*<sup>3</sup> number, from a postgraduate course sponsored by the American College of Physicians, presents the experience of many of Gallagher's colleagues and consultants at the Adolescent Unit in Boston.

Normal growth and development is authoritatively covered by Tanner in an excellent book, *Growth at Adolescence*.<sup>4</sup> The author presents data from his own extensive investigations as well as from the pertinent literature. Growth disorders are summarized in a short monograph by Kaplan<sup>5</sup> and are presented in more depth by Wilkins in *Diagnosis and Treatment of Endocrine Disorders in Children and Adolescents*.<sup>6</sup>

From the Department of Pediatrics and the Adolescent Unit, Children's Memorial Hospital, University of Oklahoma Medical Center, Oklahoma City, Oklahoma.

One of a series sponsored by the Department of Continuing Education, University of Oklahoma Medical Center.

Psychiatrists interested in adolescence turn first to *On Adolescence*<sup>7</sup> by Peter Blos. This short book is difficult reading for the non-analytically trained physician. Equally authoritative but more readable is *The Adolescent and His World*<sup>8</sup> by Irene M. Josselyn. *The Emotional Problems of Adolescents*<sup>9</sup> by Gallagher and Harris is written for the parent, coach, school teacher and counselor who deal with teenagers. This book fills a need similar to that which Spock fills for parents of the younger child. It is a valuable addition to the physicians' lending library.

*Pediatric and Adolescent Gynecology*<sup>10</sup> is a new publication resulting from a conference of the New York Academy of Sciences. The chapters are comprehensive yet brief and readable.

Another new book *Infectious Mononucleosis*<sup>11</sup> by Hoagland presents the author's personal experience with 500 cases of this disease. Undoubtedly the authoritative text on the subject, this book is concise but unfortunately has no illustrations.

The team physician will rely heavily on *Treatment of Injuries to Athletes*<sup>12</sup> by D. H. O'Donoghue, Chairman of the University of Oklahoma Department of Orthopedic Surgery.

As physicians we should encourage excellence in teaching health in our local school systems. *Personal and Community Health*<sup>13</sup> by C. E. Turner is a widely used, up-to-date text appropriate for use in the high school health class and should be available in public libraries as well. □

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## Respiratory Failure and Heart Failure

C. A. GUENTER, M.D.\*

Several studies have emphasized the relationship between respiratory failure and heart failure.<sup>1,2</sup> The evidence is clear that both acidosis and hypoxia cause pulmonary hypertension, and pulmonary hypertension may result in heart failure. Filley and associates demonstrated that there are two basic patterns of obstructive lung disease with similarly identifiable patterns of hemodynamic alterations. One group of patients, the emphysematous type, whose primary symptom is generally dyspnea, may not have a prominent history of cough. They tend to be thin, and in obvious respiratory distress. They may have arterial hypoxemia and hypercapnia, but generally it is not pronounced. The heart is not in "failure" in that there is not a greatly increased filling pressure, and no evidence of systemic fluid accumulation. The other group of patients, the bronchitic type, have a chronic productive cough, are frequently overweight, and appear less distressed. They are generally heavy cigarette smokers. They tend to have episodes of severe respiratory and cardiovascular decompensation, characterized by severe hypoxia, hypercapnia, and marked elevations in pulmonary artery pressure. These patients have clinical evidence of heart failure in that the filling pressures of the right ventricle are elevated and there is peripheral edema. Despite the conventional signs of heart failure, the cardiac output is, in general, better maintained in these patients than in the emphysematous type. Whereas, the emphysematous

type do not respond dramatically to therapeutic endeavors, these patients frequently reverse the pulmonary hypertension and evidence of heart failure with correction of the hypoxia and hypercapnia.

Why should one patient with fixed pulmonary hypertension develop a low fixed cardiac output, and thus accept a decrease in oxygen transport to the tissues, and another patient with episodic pulmonary hypertension develop evidence of severe heart failure at higher levels of cardiac output? The metabolic rate and total oxygen transport to the tissues are apparently not the sole controlling factors. Whatever the controlling mechanisms, the prognosis appears better in the bronchitic type who may, indeed, present with the most profound respiratory failure and the most dramatic evidence of heart failure.

Several general concepts regarding hemodynamic changes in respiratory failure deserve emphasis: (a) heart failure, as demonstrated by a decreased cardiac output, it is not necessarily associated with increased right atrial pressure and edema; (b) pulmonary hypertension and resultant right heart failure is frequently reversible; (c) the prognosis may be better in some patients with cyanosis and heart failure (the bronchitic type), than in others without clinical evidence of heart failure but with a low fixed cardiac output (the emphysematous type). □

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## Physicians-Attorneys Plan Three-Day Institute— July 11th-13th

The Joint Medical-Legal Relations Committee of the OSMA and the Oklahoma Bar Association are planning a three-day "Medical-Legal Institute" for Fountainhead Lodge, July 11th-13th. The institute is designed to give physicians and attorneys a better understanding of their interprofessional relationship.

This will be the second medical-legal institute held in the state. The first, held in 1966, was jointly sponsored by the Oklahoma County Medical Society and the county bar association. After that meeting it was felt that the institute was important enough to warrant sponsorship by the state associations.

The three-day meeting will serve a triple function. It will be a teaching program for both attorneys and physicians regarding the law and medicine; it will be a forum for discussions about the problems arising between attorneys and physicians; and it will serve as an opportunity to allow attorneys and physicians to enter into a closer professional relationship.

To better serve this last function, all Oklahoma physicians are urged to invite their personal attorney to attend the meeting with them.

The opening session of the institute will be held Thursday, July 11th, in the ballroom of Fountainhead Lodge. The presidents of the two state associations, Ed Hieronymus and Scott Hendren, M.D., will welcome the institute's participants.

The first address will be delivered by Mr. Raoul Magana, LL.B., a prominent California attorney. Magana will speak on the subject "Informed Consent," one of the most active areas for malpractice lawsuits against physicians. The address will be an explanation of exactly what "informed consent" means medically and legally.

A cocktail hour for all participants is planned for 6:30 Thursday evening. To give physicians and attorneys in

attendance more time for socializing, there will be no formal meals during the institute.

The opening session, Friday morning, July 12th, will be a presentation on the interprofessional code. The code, a joint project of the Oklahoma Bar Association and the OSMA, is a series of guidelines to be used by attorneys and physicians when involved in a legal proceeding. Attorney George Short, Chairman of the OBA committee, participated in the original drafting of the code and will explain its history and provisions. A copy of the code will be made available to all participants.

A panel discussion on four interprofessional problem areas will follow. A physician and an attorney will speak on each topic. Medical reports, medical testimony, discovery and privilege, and payment for reports and testimony will be discussed by the panel with questions from the audience. Doctor Barton Carl, OSMA committee chairman, will serve as panel moderator.

Friday afternoon's session will feature an address on the subject "The Conspiracy of Silence—Does It Exist?" by Howard K. Berry, Sr., Oklahoma City attorney. Scott Hendren, M.D., OSMA President, will respond to Mr. Berry's remarks. This talk will deal with the reluctance of physicians to testify against one another and the difficulty encountered by an attorney when trying a case involving the necessity of such testimony.

The second half of Friday afternoon's presentation will be on "Medical Malpractice Screening Plans" and will be divided into two segments. The first segment will be a report on the so-called "Denver Plan" used in Colorado to screen malpractice claims against physicians. The second segment will be a panel discussion by two Oklahoma physicians and two attorneys on the advisability of such a plan being started in Oklahoma.

"Limitations on Diagnostic Aids" will be the subject for discussion Saturday morning, July 13th. This one-hour segment of the morning session will be presented by physicians for attorneys. It is meant to be an explanation of why certain diagnostic procedures and functions cannot be absolutely accurate. The EEG, EMG, ECG, x-ray and autopsies will be discussed during this time.

There is a feeling among most laymen and many attorneys that the modern diagnostic aids used by a physician will tell him exactly what is wrong with an individual and give the exact extent to which he is incapacitated. This discussion is meant to dispell this misconception.

Another portion of the Saturday morning session will concern itself with professional corporations as they can be used by attorneys and physicians in their practices. Jim Davis, LL.B., will give a detailed talk on the Oklahoma statutes applying to professional corporations and their use by professional businessmen.

The final topic for the institute will be the "Physicians Annual Legal Checkup" given by Jack Sheean, Oklahoma City attorney. It is designed to aid physicians in their estate planning, purchase of insurance, and other areas in which legal problems, other than malpractice, might arise.

A registration fee of \$25 per participant is to be charged for the institute and will be used to offset any cost incurred. Physicians wishing to register for the institute should write the Medical-Legal Institute, P.O. Box 18696, Oklahoma City, Oklahoma 73118.

The institute has been planned to leave several free hours for participants to enjoy the facilities of Fountainhead Lodge. □



## Few Vacancies Left On European Tour

The OSMA sponsored European Tour is filling fast. As of the middle of April, a total of 67 persons have signed up for the two-week fun-filled tour.

The tour, scheduled for July 17th to August 7th, has stops planned in London, Paris, Lucerne, and Rome. A special seven-day extension has been arranged which will include a trip to Florence, Venice and Berlin.

Total per person cost for the tour will be \$800 from Oklahoma City and return and \$791.50 from Tulsa and return. The price includes economy classed domestic and transatlantic jet transportation, two meals per day, accommodation in first-class hotels, sightseeing, fees and tips and taxes as imposed by hotels during the 16-day main tour. The seven-day extension may be arranged for an additional \$149 per person.

All accommodations will be in first class hotels and will be either twin or double bedrooms with bath. Travel between cities in Europe will be tourist class on the airlines. Sightseeing will be by motor coach or private car. An English speaking guide will be furnished for all tours.

Travel Unlimited, of Tulsa, has carefully arranged the schedule to give the traveler a maximum amount of "free" time for personal sightseeing and shopping.

A colorful brochure, "OSMA European Tour," is available from the OSMA Executive Office in Oklahoma City. The brochure outlines the tour on a day-by-day basis.

A deposit of \$100 is required at the time of registration to insure a place

on the tour. Final payment is due 45 days before departure. There will be a full refund if arrangements are cancelled 35 days prior to the departure.

The "fly now . . . pay later" plan can be used with a ten per cent down payment and up to 36 months to pay the balance.

### Tour Highlights

July 17—Depart New York for London via TWA jet.

July 18—Arrive London and check in to Hotel Picadilly. Afternoon free.

July 19—Tour East End of London, London Bridge and Tower of London.

July 20—At leisure in London for personal activities.

July 21—Full day tour of Stratford-On-Avon, the home of Shakespeare.

July 22—Fly to Paris and check in to Hotel LeGrand. Afternoon free.

July 23—Morning tour of Versailles with afternoon free.

July 24—All day free in Paris for personal activities.

July 25—Morning historical tour of Paris and an afternoon tour of modern Paris.

July 26—Depart by air for Zurich and travel by deluxe motorcoach to Lucerne for check in at the Hotel Grand National. Afternoon free.

July 27—The morning free in Lucerne with a half-day excursion to the summit of Mt. Pilatus planned for the afternoon.

A special party is planned for this evening with drinks at the famous Stadtkeller Restaurant, featuring folk music and typical Swiss entertainment.

July 28—Fly to Rome and the Hotel Mediteraneo. The balance of the day will be at leisure.

July 29—Sightseeing tours of ancient and modern Rome.

July 30—Free time in Rome for personal activities.

July 31—In the afternoon visit Tivoli and the famous Villa D'Este.

August 1—Return jet flight to New York.

August 1-August 7—Optional tour in Florence, Venice and Berlin. □

## OSMA Associate Executive Secretary Named

A thirty-year-old Edmond civic leader, David Bickham, assumed duties as Associate Executive Secretary of the Oklahoma State Medical Association on April 15th. Before joining the OSMA staff, Bickham was with the Oklahoma Mortgage Corporation as a residential and commercial loan officer.

Born in Louisiana, he attended Louisiana State University, Central State College in Edmond, and the University of Indiana. Among his civic affiliations in Edmond are his chairmanship of the Board of the Edmond Junior Chamber of Commerce and of the Board of Management of the Edmond YMCA. He also serves as Vice-President of the Edmond Junior Chamber of Commerce and is a member of the Urban Renewal Authority, Recreation and Park Commission, Citizens Finance Committee and the Edmond Capital Improvements Committee.

He served with the United States Army as an Intelligence Reconnaissance Expert in Germany and as an instructor at the Georgia Infantry School.

Bickham is filling the vacancy left by the untimely death of Dwight Whelan on February 13th. He is married and has two children. □

## TULSA NEIGHBORHOOD HEALTH CENTER PHYSICIANS NEEDED

The Tulsa City-County Health Department and Tulsa County Medical Society's Neighborhood Health Center soon to be opened in North Tulsa offers exciting opportunities in a group practice setting for providing high quality personalized family care.

Positions available now for: FAMILY PHYSICIANS — INTERNISTS — PEDIATRICIANS — OB.-GYN. — OTHERS. Salaries competitive — Opportunities for continuing education — Liberal vacation, insurance, and retirement programs.

Apply, submitting training and experience to: George W. Prothro, M.D., Director, Tulsa City-County Health Department, 4616 East Fifteenth Street, Tulsa, Oklahoma 74112.



## LEGISLATIVE DIGEST

The OSMA Legislative program is "wrapped up" for this year. During the Second Session of the Thirty-First Legislature, the Legislative Committee has had sixty-five bills under observation.

The following is a status report on the most important bills.

### Senate Bills

S.B. 48: This bill would authorize the Board of County Commissioners to contract for ambulance services on a countywide level. The bill passed the Senate during the First Session and was sent to the House where it was drastically amended. These amendments destroyed the purpose of the bill. As originally written this bill was endorsed by the Legislative Committee.

S.B. 95: A bill providing procedure by which claimant may ascertain existence, amount of and provisions of liability insurance in damage suits. Opposed by the OSMA Legislative Committee, this bill was stricken from the calendar and is now dead.

S.B. 346: A bill authorizing State Board of Health to adopt rules and standards, with the advice of the State Hospital Advisory Council and the State Board of Pharmacy, with respect to the storage and dispensing of drugs and medications for hospital patients. The Board of Pharmacy is empowered to inspect such drugroom facilities and shall report violations to the State Board of Health. This bill was endorsed and approved by the OSMA House of Delegates during its last meeting and has been signed into law by the governor.

S.D. 416, A bill amending the Workmen's Compensation Law to provide for payment for medical services to an injured employee who becomes deceased. Liability for such payment is placed upon the employer. Endorsed by the OSMA, this bill is currently awaiting signature by the governor.

S.B. 664: A bill providing that a party to a lawsuit shall not be required to submit to more than one physical examination and that said

examination shall be in the presence of an attorney or other person designated by the party. This bill was actively opposed by the OSMA and died on the Senate Calendar.

S.B. 708: A bill providing that the State Board of Health shall consist of four registered physicians, a psychiatrist, a pharmacist, a dentist, a hospital administrator, and an osteopath. The OSMA position was to oppose any decrease in the number of physicians or increase in number of people on the board. This bill was allowed to die in a conference committee.

S.B. 712: This bill was initiated and endorsed by the OSMA. This bill provides immunity from liability for good faith decisions of and actions of members of Hospital Utilization Review Committees as required by Medicare. The Medicare Law requires that such committees make decisions on utilization but gives committee members no immunity from civil suits brought by patients. This bill has passed both houses and has been signed into law by the governor.

S.B. 726: This bill expanded the foreign trained physician limited licensure law to provide that such physicians could practice in "university infirmaries." This bill was killed by vote of the House of Representatives.

### House Bills

H.B. 710: Introduced and passed by the House of Representatives, during the first session, this is the so-called "therapeutic abortion bill." At the recommendation of the OSMA this bill was extensively amended in the Senate. These amendments provide for a "committee on therapeutic abortions to be established in all accredited hospitals, such committee to pass on the advisability of an abortion." This bill died in a senate committee.

H.B. 985: Providing authorization for conducting autopsies in the event of unexplained deaths. Giving the state Medical Examiner, his deputy or the district attorney authority to order such and providing an appeal mechanism for any one opposing such. This bill was endorsed by the

OSMA and has been signed into law by the governor.

H.B. 1094: This is an amendment to the existing "Good Samaritan" law and provides immunity from civil damage for all practitioners of a healing art. The bill was originally written to cover dentists and then was amended to include all "practitioners." The amended version has been signed into law.

H.B. 1172: Creating a lien in favor of a hospital rendering services to an injured party. The lien would attach to any judgment proceeds resulting from suit or settlement. This bill was allowed to die in a Senate committee.

H.B. 1200: Initiated and endorsed by the OSMA, this bill provides addition of blood products or tissues to the human body shall be deemed a service by every person participating therein and shall in no event be construed or treated as a sale of a commodity. This will eliminate the possibility of a physician being sued for a "breach of implied warranty" when the use of such products gives a bad result. This bill is currently awaiting the governor's signature.

H.B. 1227: An act relating to insurance and providing that any clause in an insurance policy that limits the insured's free choice of health practitioner licensed under the laws of Oklahoma shall be void. The effect of this bill would be to expand the practice of chiropractic. Currently many insurance companies refuse to pay for chiropractor's services. This bill would have forced them to pay for such services even though their policy expressly limited payment to a medical doctor or osteopath. The bill was allowed to die on the House calendar without coming up for a vote.

H.B. 1270: Authorizing the collection of fees by county, district, cooperative and city-county health departments for non-physician services and providing for the disposition of fees collected. Endorsed by the OSMA Legislative Committee, this bill is currently on Senate General Order.

H.B. 1276: Providing that the Oklahoma Health Department shall be



made a licensing agency for licensing, inspection and regulations of ambulances. It also provides for standards for licensing of drivers, attendant-drivers and requires ambulance companies to keep certain records and reports. This bill was designed to improve ambulance services and was endorsed by the OSMA. The bill was allowed to die on the House calendar without coming up for a vote.

HJR 561: This resolution provides that the Department of Public Welfare shall also be known as the Department of Social and Rehabilitation Service and Institution. The bill passed and is included here for information purposes only. □

### Joseph M. White, M.D., Accepts Texas Position

Joseph M. White, M.D., associate director of the University of Oklahoma Medical Center and dean of the medical faculty, has been appointed vice-president for academic affairs and dean of medicine at the University of Texas Medical Branch, Galveston. Doctor White will assume the new position June 1st.

Doctor Warren G. Harding, vice-president for administration at the Galveston center, has been temporarily acting in this position since September 1st, when William J. McGanity, M.D., resigned as dean of medicine to devote full time as chairman of the obstetrics and gynecology department.

Doctor White joined the OU Medical Center faculty in 1956 as professor and head of the Department of Anesthesiology.

The anesthesiologist has served in medical center administrative posts since 1960, when he became associate dean in charge of special research and training programs.

When Mark R. Everett, D.Sc., retired in the spring of 1964, Doctor White was named interim dean and director for the period until James L. Dennis, M.D., vice-president for medical center affairs, took office that fall.



A plaque recognizing her contribution as national founder of the Woman's Auxiliary to the Student American Medical Association is presented Mrs. George H. Garrison by James L. Dennis, M.D., University of Oklahoma vice president for Medical Center affairs. She is the wife of George H. Garrison, M.D., Oklahoma City pediatrician and past-president of OSMA. Mrs. Garrison organized the first WASAMA chapter at the OU medical school in 1955 and it was nationalized two years later.

Doctor White subsequently was appointed associate director of the medical center and in July, 1967 was given the additional title of dean of the medical faculty, a new position. He continued to head the anesthesiology department as well as discharge administrative duties until 1965.

A native of Dallas, Doctor White was educated at Southern Methodist University, the University of Texas Southwestern Medical School, Dallas, and the University of Iowa, Iowa City. He interned at Denver General Hospital and served his residency in anesthesiology at the University of Iowa Medical Center.

His activities in national professional organizations include membership in the American Medical Association's Council on Medical Education and the American Society of Anesthesiologists Council on Education. □

### ADMINISTRATIVE OPPORTUNITY

Physician, preferably with administrative medical experience, wanted to supervise medical services for approximately 2,200 male and 75 female prisoners at the Oklahoma State Penitentiary in McAlester. Duties would include supervision of the Plasma Paresis Program in cooperation with the Medical Research Commission, which is engaged in research activities at the penitentiary. Major surgical cases will continue to be transferred to the University of Oklahoma Medical Center.

McAlester is a thriving industrial town of 20,000 persons located in Southeastern Oklahoma. Nearby lakes provide water skiing, swimming and fishing with excellent hunting nearby.

Salary open; prepared to pay \$20,000 to \$30,000 to individual with proper qualifications. A forty-hour week leaves time for a physician to engage in a limited private practice.

Inquiries should be directed to Arnold E. Pontesso, Director, Department of Corrections, Plaza Court Building, Oklahoma City 73103.



## DEATHS

MILFORD S. UNGERMAN, M.D.

1919-1968

Milford S. Ungerman, M.D., Tulsa psychiatrist and brother of A. E. Ungerman, M.D., also a Tulsa psychiatrist, died March 4th, 1968.

Born in Kansas City, Missouri in 1919, Doctor Ungerman received his medical degree from the University of Oklahoma School of Medicine in 1945. Following his internship, he served two years with the U.S. Army Detachment with the Veterans Administration Hospital in Waco, Texas, before entering practice in Tulsa in 1948.

He was a past-president of the Mid-Continent Psychiatric Association and the Tulsa Psychiatric Society and a member of Tulsa Academy of Neuropsychiatry and Neurosurgery and the Oklahoma district branch of the American Psychiatric Association.

S. F. WILDMAN, M.D.

1893-1968

A retired Oklahoma City urologist, S. F. Wildman, M.D., died April 20th, 1968. Born in Edmond, Oklahoma in 1893, Doctor Wildman received his medical degree from the University of Oklahoma School of Medicine in 1924. Except for service in both World Wars I and II, he practiced continuously in Oklahoma City until his retirement a few years ago. He was a member of the American Urological Society.

In 1965, the Oklahoma State Medical Association presented Doctor Wildman a Life Membership for his many years of service to the profession.

FREDERICK C. REWERTS, M.D.

1893-1968

A retired Bartlesville physician, Frederick C. Rewerts, M.D., died April 4th, 1968. Born in 1893 in Leoti, Kansas, Doctor Rewerts graduated from the University of Kansas School of Medicine in 1924. He practiced in Hanover and Sedan, Kansas, before moving to Bartlesville in 1927.

For his years of dedicated service to his profession, the Oklahoma State Medical Association presented Doctor Rewerts with a Life Membership in 1966.

THOMAS WELLS, M.D.

1896-1968

A Bartlesville physician since 1941, Thomas Wells, M.D., died April 19th, 1968. Doctor Wells was born at Chase, Kansas, in 1896. Following his graduation from the University of Nebraska School of Medicine, he practiced in Maywood, Illinois, Memphis, Tennessee and Alexandria, Louisiana, before moving to Bartlesville. He was a member of the Southern Medical Association.

In 1966, Doctor Wells was presented a Life Membership by the Oklahoma State Medical Association in appreciation for his devotion to his profession.

### THANK YOU

Dear Friends:

The children and I wish to express our grateful appreciation for the generous gift to us made in loving memory of Doctor Stover, and thank each of you who contributed to this fund.

We are deeply touched by your kindness. Your gift will be used for the education of the children.

Please know your kind and thoughtful expression of sympathy is received with heartfelt appreciation and will be remembered always.

Gratefully,  
Mrs. Robert M. Stover ☐

## Cooperation Urged For Study of Pediatric Disorder

The cooperation of physicians has been requested in a study concerning "tracheostomy addiction" in infants and children. Our group at the Children's Memorial Hospital will appreciate seeing patients who have had at least one decannulation attempt. The study is being carried out by the Departments of Pediatrics and Otorhinolaryngology at the Children's Memorial Hospital, University of Oklahoma Medical Center. Arrangements for hospitalization without cost to the family can be made. Physicians interested in having such patients considered for this study may contact: Doctor Logan Wright, Children's Memorial Hospital, University of Oklahoma Medical Center, 800 N.E. 13th Street, Oklahoma City, Oklahoma 73104, Telephone: CE 6-1366, Ext. 670. ☐

## Mabee Foundation Adds \$10,000 To Wakita Project

The J. E. and L. E. Mabee Foundation Inc., Tulsa, has contributed \$10,000 to the Wakita Community Health Center, Thomas C. Points, M.D., the University of Oklahoma Medical Center's Project Responsibility coordinator, has announced.

The center, under construction in the Grant County town of Wakita, is the first of university-affiliated community health facilities envisioned under Project Responsibility, a plan to improve health services to rural areas.

The Mabee gift will be used to buy equipment for the acute care area or core of the health center, Doctor Points said.

Construction of the \$385,469 structure started in December and is expected to be completed in August.

"The project has been made possible by donations and stock purchases by private citizens in Grant County and neighboring areas," Doctor Points said. "We are pleased and most grateful for this additional support from a private foundation." ☐



## BOOK REVIEWS

**A SYNOPSIS OF CONTEMPORARY PSYCHIATRY.** By George A. Ulett, B.A., M.S., M.D., Ph.D., Professor and Chairman, Department of Psychiatry at the Missouri Institute of Psychiatry (St. Louis), University of Missouri School of Medicine; Director, Division of Mental Diseases for the State of Missouri and D. Wells Goodrich, M.D., Chief, Child Research Branch, National Institute of Mental Health, United States Public Health Service, Bethesda, Maryland. 3rd Edition, cloth, 299 pp. St. Louis, The C. V. Mosby Company, 1965, \$6.95.

George Ulett and D. Wells Goodrich make no apologies that *A Synopsis of Contemporary Psychiatry* is intended as an extensive or comprehensive text in the field of psychiatry. On the contrary, it is an abbreviated, concise and easily read handbook that covers a great deal of what is known in psychiatry today. An example of their method is shown in the second chapter, entitled the "History of Psychiatric Thought." Dating from the Christian era to present times, the main contributors to the field are named with short summaries of their contributions. If one's interest is stimulated in a particular area, then one has the basis to pursue this interest in a more detailed manner by using their bibliography.

For those of us who are somewhat unfamiliar with 1) the techniques involved in psychiatric interviewing; 2) the most pertinent points in the neurological examinations; 3) the general outline of psychological testing; brief resumes are given. A short resume of psychodynamic concepts is given, again with ample reference data for those who wish to pursue this further.

Part Two lists the clinical syndromes according to the A.P.A. standard nomenclature, giving the history, physical and laboratory findings, prognosis, differential diagnosis and treatment in a concise and brief form. There is no doubt some

controversy on portions of the recommended treatments, such as the treatment of acute D.T.'s, but these controversies probably will continue for years to come, until better, more controlled studies have been completed.

Part Three lists in more detail the therapies involved in practicing psychiatry. As the authors state in their introduction, they have been criticized for being too organic. Certainly their accounts of the psychiatric team, psychotherapy and group therapy are quite limited. Again, however, ample reference material is present for those wishing to pursue their individual interests. The remainder of the book is given to the more organic techniques of treatment and includes such modes as the various forms of shock treatment, psychosurgery and chemotherapy.

All in all, for a small handbook of less than 300 pages which manages to cover significant portions of the field of psychiatry with ample reference material, it is well worth the investment for medical students, interns, residents and those in practice who need a readily accessible and functional synopsis in psychiatry.—*Alvin Wm. Patrick, M.D.*

### RADIOLOGY IN WORLD WAR II.

Prepared and published under the direction of Lieutenant General Leonard D. Heaton, the Surgeon General, United States Army. Editor for Radiology: Kenneth D. A. Allen, M.D. First edition, cloth, 1087 pp., with 317 illustrations. Washington, D.C.: U. S. Government Printing Office, 1966.

This volume, another in a long series on the official history of the U.S. Army Medical Department in World War II, was prepared by The Historical Unit under the direction of the Surgeon General. The multiple chapters were edited by Doctor Kenneth D. A. Allen utilizing some 31 authors.

This book is adequate as a historical documentation of the worldwide activities in which the radiology section of the U.S. Army engaged during 1941-1946. As a study in clinical radiology, however, it is value-

less. It will be useful to young radiologists entering active duty with our Armed Forces, especially those embarking on combat duty. The sections on the technical problems faced by overseas installations should interest all radiologists; such as the influence of a hot, humid, tropical climate on cables, cassettes, intensifying screens, electrical switches and relays, and electrical and gasoline motors; the heat caused great line voltage fluctuations by its damage to gasoline generators; dark rooms were almost impossibly moist and hot, and ventilation well nigh impossible; films designed for 70 to 72° processing were often developed at 120° F.

The problems pertaining to X-ray equipment, replacement of parts, and maintaining a constant supply line of dispensable films and chemicals are not adequately discussed. The difficulty encountered in procuring trained radiologists is emphasized and the training of radiology technicians is covered quite well. The minor role of radiation therapy in the general hospitals was handled quite well during World War II, and the subject is adequately discussed.

The discussion of clinical material is meager, but in a few areas it is done most interestingly. That portion dealing with yaws in the Southwest Pacific theatre is good. The increased incidence of ankylosing spondylitis in the tropics is covered well.

There are several shortcomings. The paucity of complete recommendations for the operations of functioning X-ray departments is obvious. Yet the consultant for the Southwest Pacific does a creditable job. The chapter dealing with radiology and the atomic bomb could have been most intriguing and profitable to the reader, but the magnificence of this operation somehow was buried in discussions of names, dates, and committees.

All of which emphasizes again that this book is slanted primarily toward military history. Perhaps everyone should have an understanding of the past, but not 1087 pages worth.—*Edmond H. Kalmon, M.D.* □



## *A Memorial*

What constitutes greatness in a man?

It is an amalgam of many qualities, virtues, abilities and attitudes which are not calculated by ordinary units of measure. Greatness does not come suddenly but develops gradually as one projects his ideas, ideals and personality into his day-to-day contact with others as he pursues tasks and attains goals.

N. D. Helland was a great man. His accomplishments in developing the idea of prepaid medical care for the people of Oklahoma, the physicians and the hospitals, were of a magnitude not often equalled.

He was a man of vision with the wisdom to plan practically for the future, to choose and train capable associates, never expecting any discipline of his associates and employees which he did not apply to himself.

Patience, loyalty, industry, study, investigation, tolerance and consideration for the rights, privileges and opinions of others were all a part of Mr. Helland's way of life.

N. D. listened to advice and weighed criticism of which he received his fair share. Over the years there were many differences of opinion and disagreements, but never hostile conflict, and he had the unusual ability to bring together those of diverse opinions in a manner for the betterment of the Blue Plans of Oklahoma.

Mr. Helland loved Oklahoma. Many times he could have left this state for more lucrative and more influential positions, but he chose to remain. His opinion, advice and experience were drawn upon many, many times in settling problems and establishing policy in District IX, and he served in practically every position of importance at the national level of the Blue Plans.

Though he attained a high place with heavy responsibilities, N. D. was a humble man. He was always acutely aware of and deeply interested in people as individuals.

He gave of himself freely in the service of mankind and his Creator.

Oklahoma and Oklahomans will long remember N. D.

*GEORGE H. GARRISON, M.D.*

*Past President*

*Oklahoma State Medical Association*



## "I Don't Know"

FOR A physician to tell his patient "I don't know" must represent a rather unusual, infrequent and for some doctors—an unknown experience. There may be many reasons why the doctor finds it virtually impossible to admit to his patient that he actually doesn't know the cause of symptoms. For some doctors it seemingly represents a completely unthinkable admission, since it might cause the patient to question the professional status of his physician.

It might be that a profound degree of humility is necessary for doctors to make this confession. Is the medical profession almost devoid of humble men? Patients often express the conviction that they would have more admiration and confidence in their doctor if he would only admit that he really didn't know what the trouble was. This viewpoint is probably very prevalent. It is conceded that there is a certain minority of patients whose attitude is such that an admission of this nature would immediately precipitate a search for another physician.

There was once a veterinarian who will always be remembered because of his ability to provide an almost instantaneous, unequivocal diagnosis on any occasion. It may be added that a few physicians in this category have also been encountered. Most people probably don't expect their doctor to come up with an exact diagnosis, particularly on the first examination or perhaps on the first few visits. Maybe the physician should have little reservation about freely admitting to his patient that he is unable to establish an immediate diagnosis. Could it be that a closer rapport might be established if we did not attempt to deceive patients by blithely making a definitive diagnosis on the very first visit, unless we can readily establish such a positive diagnosis?

Finally, it might be well to remember that it is no disgrace to confess that there are

many occasions when we really don't know. Such a policy would not result in loss of face, but an improved physician-patient relationship.—J. Murphree, M.D. □

## A Small Town Physician in Vietnam

25 April 1968

Danang, South Vietnam

OUR GROUP FORMED in Chicago March 7th, and after a briefing from Doctor Charles Moseley of the AMA, we left for Anchorage, Alaska, then Tokyo; and finally Hong Kong where we had a brief period of relaxation and shopping. Then a two-hour flight to Saigon, and finally into the heat, humidity, turmoil, and unrest of a country at war; a country filled with foreigners carrying guns and more money than most natives will see in a lifetime of hard labor; where an undercurrent of fear is often manifest by the wild abandon of riding a motorbike at high speeds through throngs of people, bicycles, cars, trucks, and pedicabs. Our five o'clock traffic is a breeze compared to this traffic at any time of the day.

One day was used for another briefing, a tour of the open markets, and a visit with a departing group of physicians (who could hardly wait to get home). Then a flight out on a small plane to one of the 44 provincial hospitals scattered over the 600 miles of South Vietnam.

From Saigon in the flat delta land to the northern mountains and coastal plains, there are constant signs of the recent Tet uprising in which the Viet Cong made a shambles of several years of our careful planning to help the economy of this fertile land. Buildings are demolished and the Vietnamese people are frightened because they know it can happen again. American troops who had been far afield as advisors in the pacification program to prepare these people for peace have been drawn back into defended compounds in or near the larger cities, schools are blasted, temples are destroyed, and rice paddies are untended because many of the men are dead or caught up in the requirements of six years compulsory service in the Army of South Vietnam. The only possible gain we had from this 30 days of



intensive war was to find that we had allies who could really fight if they were forced into it.

No words, no briefing session, or any printed material can prepare an American for his first few days in a provincial South Vietnam hospital: It was appalling to see the old buildings, the filth, the stench of bodies that had not bathed for weeks, the nearby excreta all over the ground, the complete lack of sanitation (I was in a 600 bed hospital which had *no* toilet), the lack of screened windows, the flies everywhere, and the many rows of beds with two or three people in each bed. The severity of war wounds and the suffering that these stoic people can tolerate were amazing. Even after major surgery *no* sedation is ordered.

I was assigned to a surgical team of five American doctors working with six Vietnamese physicians and during March we did 448 major operations. Some elective procedures are done, but well over half—possibly 80 per cent—is emergency work from war wounds or traffic injuries. When the ambulances and helicopters begin dropping in at the hospital we really went to work, and sometimes we did not finish until 5:00 a.m. the next day. The day's surgery begins again about 8:30 a.m.

On the medical wards gastrointestinal complaints are very common, but there is tuberculosis, typhoid, intestinal parasites, malaria (some cases with spleens below the iliac crest), severe purulent cervical adenopathy, some malignancies, and bleeding ulcers—to name just a few. I saw one six-year-old boy with a bleeding duodenal ulcer who had an admission hematocrit of six grams. Pathology is everywhere but much of the diagnostic work is "sight, smell, and feel" because laboratory and x-ray facilities are limited. Also, we had to use blood that was sometimes over four weeks old, but still it saved a great many lives.

The language barrier is considerable. These people do not understand English and even the physicians (who are fluent in French, which is taught in their six year medical courses) speak so little English that it is difficult to teach or talk. We did our utmost to learn simple Vietnamese phrases quickly, and we asked their words for nearly everything we used.

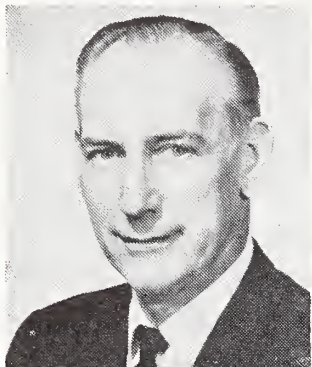
The Vietnamese nurses are skilled in the simpler forms of work, and many of them can do excellent suturing, but they are quick to tire (this may be due to the siesta habit, or to their diet which usually is not over 2200 calories per day) and they seem to have very little compassion for their own race. They thought nothing of taking off for a two hour siesta when the hallway was full of casualties on litters; a few patients died right on the floor when the Americans could not cajole nurses and anesthesiologists into staying on the job. How can these people be helped when they do not really want to help themselves? Some of the wounds were as much as three days old when first seen, so we saw a few cases of tetanus that won't be soon forgotten. Incidentally, we found that huge doses of penicillin, up to 40 million units per day, seemed to increase the survival rate. The standard tetanus antitoxin dose of 5,000 units is given to every patient who comes through the emergency room, and it was only through the untiring efforts of one of our surgeons that we finally started a program of tetanus toxoid on all of the injured. I hope it is continued.

Schooling in this land is a very expensive and very desirable goal, but not everyone can get it. Schools are so crowded and qualified teachers so few that all schools at Da-nang operate two shifts a day, starting at 7:30 in the morning and ending at six in the evening—six days a week, eleven months a year! The government tries to give four years compulsory education, but beyond the fourth grade on it is strictly a financial problem and depends on how near to a good school the child lives. With refugees pouring into all the cities the schools cannot cope with the problem well. Da-nang once had a population of 70,000 when the French were here in the early 1950's—now the population is estimated at 270,000! Classes are crowded, ninety students to a room is common, one book is shared among four or five children, but all this is forgotten when you see these children line up on the playground at 7:30 sharp to raise the flag. The national spirit is not forgotten.

These are a confused, not a *beaten* people, who are at least 50 years behind our western society. Coolie women work hard all day long for 50 piosters—about 42 cents

(Continued on Page 289)





Public Law 89-749, "Comprehensive Health Planning and Public Health Services Amendments of 1966," has been described as a "sleeper" in the 89th Congress. Enacted in the same Congress as Medicare, this law received little notice in the storm of this revolutionary legislation.

The 90th Congress on, December 5, 1967, enacted Public Law 90-174, which amended the Health Planning Act and expanded the authorization of grants for comprehensive health planning and services. Now, the "Partnership For Health Act" is in business. We physicians are vitally affected; and, therefore, we must be informed, concerned and involved in the implementation of this law.

The definition of comprehensive health planning (H.E.W.) states—"comprehensive health planning is viewed as a process that will enable rational decision-making about the use of public and private resources to meet health needs." (We physicians are a resource.)

In Oklahoma, the State Health Planning Agency has been created by Governor Bartlett and assigned to the Division of the Budget. The agency's Director is Jack V. Boyd. An interdepartmental committee on health, with Governor Bartlett as chairman, has been formed and an advisory council of 40 members (seven of whom are physicians and one of whom was nominated by OSMA) has been appointed.

It is anticipated that 11 to 14 areawide health planning agencies will be organized. There are four of these now in operation: The Southern Oklahoma Development Agency (SODA), Oklahoma City Area Health and Hospital Planning Committee, Central Oklahoma Economic Developing District (COEDD) and Tulsa Area Health Planning Council.

It is apparent that if physicians are to have a voice in, or are to influence the direction planning takes, we must make that voice heard in our own community.

No longer can we wait to be sought out to determine the role outlined for us in planning our projects that may well be wasteful of "medical resources."

The physicians must seek out, become familiar with, and become vocal leaders in the activities in our own area. Only by such involvement can we avoid the development of plans and projects which, without our leadership, may further the expending of health manpower in fruitless wasted effort.

Sincerely yours,

*Scott Henderson, M.D.*



## Alopecias—Diagnostic and Pathogenic Considerations

DENNIS ALLEN WEIGAND, M.D.

*Alopecias, though sometimes confusing, can usually be approached with some understanding of pathogenesis. On this basis, management may be more rational and outcome more predictable.*

**F**EW PROBLEMS concerning the skin and its appendages are of so much concern to patients and physicians as alopecia. Hair loss is of interest because, as far as we know, hair is essentially without function. It is of concern because hair is exceedingly important from a cosmetic and psychological standpoint. The fact that esthetic considerations prevail is clear in that people have traditionally sought the advice of hairdressers and barbers for problems of hair loss. Many people seem to consider the hair peculiarly unrelated to the rest of their anatomy and hence quite outside the realm of medicine. However, as people are becoming more medically sophisticated this pattern is changing, and medical advice is sought more freely. Physicians may be frustrated by the apparent complexity of alopecias and prefer to dismiss them as the inevitable price of evolution.

The purpose of this paper is to discuss those alopecias in which recent studies have shed some light on pathogenesis, but in which knowledge is still insufficient to make management clearcut and simple. Accordingly, alopecias due to dermatophytoses, burns and other non-specific processes will not be discussed. Alopecias due to various congenital defects, and from certain drugs and poisons will be discussed briefly. Diffuse hair loss, hereditary-patterned baldness, alopecia areata, traumatic alopecias and physiologic alopecias will be discussed at length.

### ANATOMY AND PHYSIOLOGY

Since the science of diseases of the skin and its appendages is founded almost entirely on visual observations, it is especially important to preface considerations of alopecia with an understanding of the anatomy and physiology of the hair.

The surface of the human fetus, up to one month of age, is covered by a one-cell thick ectodermal layer, the fetal periderm. At this time also, mesenchymal cells are proliferating beneath to form the dermis, which is finally to become the main bulk of the skin. During the second fetal month a second, inner layer, the stratum basale, is added to the periderm. During the third fetal month a third layer develops so that from the outside in, there are periderm, stratum intermedium, and stratum basale.

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From the stratum basale small buds of cells known as primary epithelial germs proliferate down at intervals into the dermis. These buds are the anlagen of apocrine sweat glands, sebaceous glands, and hair follicles. The greatest population of these is on the head, where their development begins. Subsequent development proceeds caudally during the fourth and fifth fetal months. As the presumptive hair follicles enlarge and differentiate, their free advancing ends become clavate and each encloses a little ball of dermis, the dermal papilla. This tiny structure will later house the main blood supply to the hair-producing cells (matrix) of the follicle (see figures).

The presumptive follicle is now enlarged to a column of pluripotential epidermal cells. It progressively hollows out through the center to make way for the subsequent hair which will arise from a bulb of cells surrounding the dermal papilla at the base of the follicle. At this time it is apparent that the major portion of the follicular wall, the external root sheath, is simply an extension of the now completely formed surface epidermis. At the fundus of this sac-like structure is a matrix of cells that produce hair, much like the surface epidermis produces stratum corneum. The main difference is that the latter desquamates and the former does not. There has been also a concomitant differentiation of part of the external root sheath into the sebaceous gland, so that this gland becomes an appendage in the wall of the hair follicle. In addition, further follicular blood supply develops from surrounding dermal and subcutaneous vascular plexi.

The hair matrix has a high mitotic activity, comparable to that of the bone marrow. On the average adult scalp, which bears about 100,000 hairs, there is a daily production of 100 feet of hair. Hair, like the stratum corneum of the epidermis, consists mainly of keratin, a fibrous protein, and certain fats.

Fetal hair (lanugo hair) is present on the head by the fifth fetal month and subsequently appears over the remainder of the body. This hair, for the most part, is shed shortly before birth. More on this phenomenon will be discussed later, as it relates to neonatal

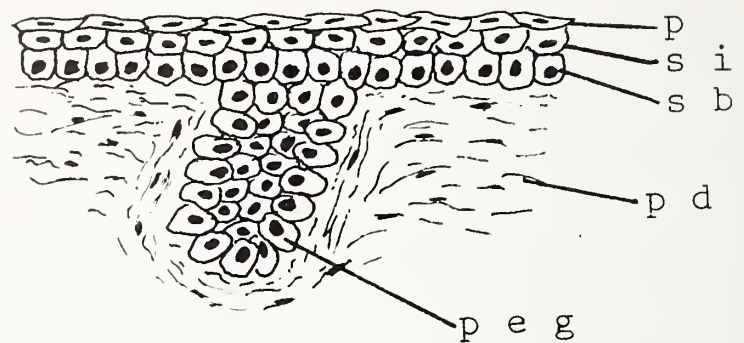


Figure 1. Primitive epidermis of a 12-week embryo. p-periderm, si-stratum intermedium, sb-stratum basale, pd-primitive dermis, peg-primary epithelial germ.

alopecia. The newborn infant has a second pelage of lanugo-like (vellus) hair, of variable amounts. As he ages, he gradually acquires adult type hairs. Morphologically adult hairs fall into six categories: (1) scalp, (2) eyebrow and eyelash, (3) beard, (4) body, (5) pubic, (6) axillary. Hormonally, adult hairs fall into three categories: non-hormonal (eyebrows and eyelashes, part of body hair), hormone modified (scalp, axillary, lower pubic, part of body hair), hormone dependent (upper pubic, beard).

The growth of hair is characterized by cycles. This is true in most mammals. However, unlike the hair of other mammals, human hair grows in asynchronous cycles, *i.e.*, it does not molt. Each individual hair's cycle is independent of all others, so that growth patterns are random. The growing phase (anagen), in which there is continuous matrix proliferation and hair production, usually lasts two to six years in scalp hair, and for shorter periods in other hair. The regressing phase (catagen) lasts only about two weeks in scalp hair, and for about the same period in other hair. During this time the matrix involutes, the hair stops growing and the lower two-thirds of the follicle degenerates. The blood vessels in the dermal papilla and around the follicle collapse but do not degenerate. The resting phase (telogen) lasts two to six months in scalp hair and in other hair. At this time the hair is loosely implanted in the follicle. A new anagen phase begins as the few remaining matrix cells begin proliferating anew to start a new hair. The previously collapsed vessels re-open and re-establish the blood supply. The old telogen hair ("club hair") is pushed out, and the follicle grows back to its original length for the new anagen phase.



These phases can be easily recognized by the gross appearance of individual scalp hairs. If a firmly implanted (anagen) hair is plucked, a sticky grayish-white membrane is seen around the lower two to three mm., or the hair root. This membrane is actually the major portion of the follicle and matrix. However, enough cells of these two structures have remained behind to allow full regeneration of a new hair. If a loosely implanted hair (telogen or club) is plucked, a tiny, dry bulb is seen at the lower end, covered by a few degenerated follicular cells. These club hairs are ordinarily thin, tapered, and light in color when compared to anagen hairs. The catagen phase is so brief that hairs therefrom are seldom seen, but their appearance lies somewhere between that of anagen and telogen hairs.

Normally in the young adult, 85 to 95 per cent of scalp hairs are in the anagen phase, and five to 15 per cent are in the catagen and telogen phases. With age, and in certain types of hair loss to be discussed later, these percentages change. The normal young adult ordinarily loses 20 to 100 club hairs daily, for an average loss of about 50 daily.

NEONATAL ALOPECIA

A commonly observed phenomenon in infants is occipital hair loss followed by frontoparietal hair loss. This sometimes causes

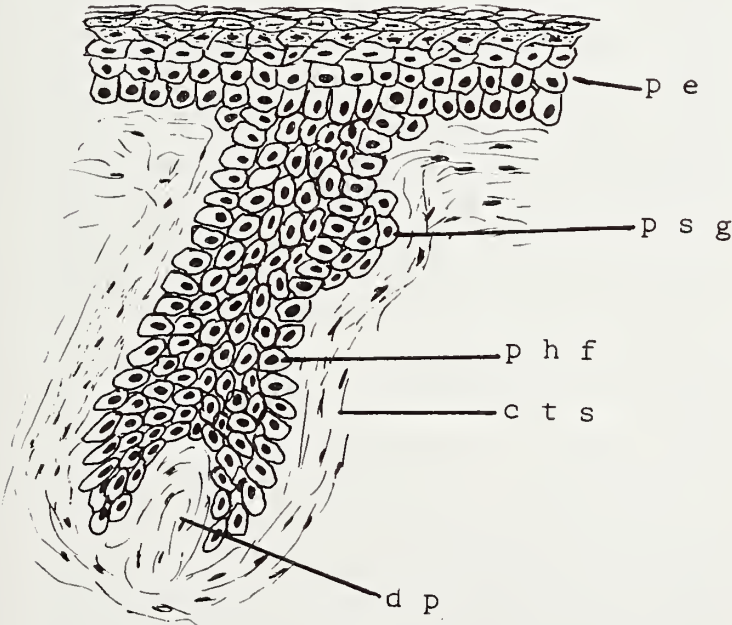


Figure 2. Subsequent differentiation toward hair follicle and sebaceous gland. pe-primitive epidermis, psg-primitive sebaceous gland, phf-primitive hair follicle, cts-connective tissue sheath, dp-dermal papilla.

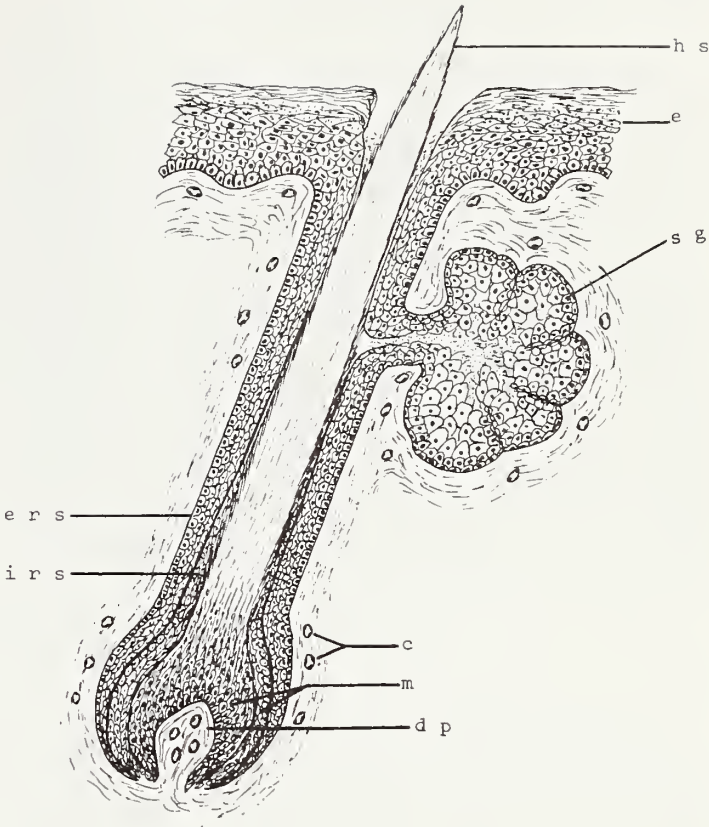


Figure 3. Mature hair follicle in anagen phase, with sebaceous gland. hs-hair shaft, e-epidermis, sg-sebaceous gland; sebum is the product of disintegration of these cells. c-capillaries, m-matrix; these cells produce not only hair shaft, but also internal root sheath (irs), which degenerates and desquamates within the follicle. dp-dermal papilla. ers-external root sheath, a continuation of surface epidermis (e).

parental anxiety and the mother may stop cleaning the baby's scalp for fear of making him bald. A satisfactory physiological explanation for this hair loss exists, and its temporary nature can be assured.

In the fifth fetal month the majority of the frontal and parietal hair suddenly goes into catagen and then telogen phase. This is, in a sense, molting, which is different from the random hair cycles of the post-natal individual, as pointed out previously. This gross change to catagen and telogen moves posteriorly in a wave, so that in the eighth fetal month it has occurred in the occipital hair. At this time a new anagen growth has appeared frontoparietally and has pushed the telogen hairs out into the amniotic fluid about three months after their change to telogen. At birth then, the new anagen growth is occurring frontally and parietally. Subsequently occipital hairs will be pushed out when the infant is in his second month of life, about three months after their change to telogen. The new anagen



hairs are still very short and the infant looks bald in the occipital area. This telogen wave is often repeated, although less extensively, so that the infant again develops partial baldness progressing from the frontal to the occipital regions. The follicles then ordinarily re-establish their cycles in a random pattern, and normal post-natal anagen and telogen percentages are established over the scalp. By the age of eight to ten months these regional losses ordinarily no longer occur.<sup>5</sup> The only treatment necessary is reassurance that the condition is temporary.

#### TELOGEN EFFLUVIUM

Temporary hair loss following periods of physiological stress likewise is a well known phenomenon. Most physicians have seen patients who, two to four months after childbirth, major surgery, or serious systemic illness, have either sudden or gradual loss of large amounts of hair. This is known as *telogen effluvium*, because it represents the sudden change of a large number of hair follicles from anagen to telogen. Older names for this phenomenon include symptomatic alopecia and defluvium capillorum. Kligman has written extensively on this subject,<sup>19</sup> and his studies indicate that over 20 per cent telogen hairs on the scalp is presumptively abnormal, and that over 25 per cent telogen hairs is diagnostic of telogen effluvium.

Post-partum telogen effluvium usually begins two to four months after delivery, and lasts two to five months, although it may last a year or more. If a small tuft of hair is plucked, it will be seen that telogen hairs constitute somewhere between 20 per cent and 50 per cent. It should be emphasized that this is true only if the loose telogen hairs have not been removed in part by recent vigorous brushing or shampooing. Ordinarily they remain in place until pushed out by a new anagen hair. This accounts for the fact that the patient is more likely to complain about the amount of hair that falls out than about the amount remaining on the scalp. Furthermore, thinning of scalp hair is seldom obvious if less than 50 per cent is lost.

Studies during pregnancy have shown that in most women, starting in the second trimester, telogen percentage decreases, and anagen percentage increases reciprocally. At term the scalp hair may be 95 per cent anagen. This is virtually a biologic characteristic of pregnancy but usually it goes unobserved. Shortly after delivery this trend reverses, and by six to nine weeks post-partum the telogen count is up to 25 to 30 per cent. At this time new anagen hairs begin pushing the relative excess of telogen hairs out, and patients may become aware of excessive hair loss. It should be understood that change in telogen percentage in the individual patient is more important than absolute values, since there is a wide range in the actual number of telogen hairs and in the rapidity with which they change to telogen. Hence the actual degree of thinning present at any given time is quite variable, if, indeed, it is even detectable.

Post-febrile alopecia, formerly seen quite often following scarlet fever, lobar pneumonia, *etc.*, is uncommon now, but studies have shown that the process is essentially like that described for post-partum telogen effluvium.<sup>19</sup>

Information on which to postulate the pathogenesis of post-partum telogen-effluvium has been sketchy and inconclusive. A retrospective study of 98 cases by Schiff and Kern gave information suggesting a hormonal basis. In their series two patients developed alopecia after caesarean sections. Most patients observed the greatest involvement on the anterior one-third of the scalp. Most of the remainder had diffuse alopecia. In nearly all cases, hair loss had occurred after all previous deliveries or miscarriages. In those cases where it had not, subsequent conception had occurred before the second menstrual period. Determinations of urinary 17-ketosteroid excretion on 11 of these patients revealed no abnormalities.<sup>35</sup> Likewise, urinary 17-ketosteroids, 17-hydroxycorticosteroids, and gonadotropins on another series of nine patients were normal.<sup>37</sup> Studies of urinary estrogen and progesterone are lacking. Perhaps the hyperestrogenemia of pregnancy and the sudden termination thereof at delivery is pathogenetic. Bullough points out that estrogens exert a powerful mitotic effect on epidermis as well as on the uterus and vagina. Moreover,



it is known that adrenalin is a powerful mitotic depressant. Its effect on epidermal cells has been confirmed in mice.<sup>7</sup> Since telogen effluvium apparently can occur after severe psychologic stress<sup>19</sup> and since it is known to occur after such physiological stresses as childbirth, major surgery, and severe illnesses, it could also be reasoned that adrenalin precipitates the change to telogen. However, Bullough further states that while these hormonal effects occur in epidermis, they have not been demonstrated in hair.<sup>7</sup>

If hormonal changes do influence telogen effluvium, they do not do so exclusively. Heparin, in addition to being an antimitotic agent, is known to induce telogen effluvium. Herein lies evidence at least that a depression of mitosis and a consequent premature change from anagen to telogen may be the common denominator. Furthermore, like the usual types of telogen effluvium, heparin-induced alopecia affects mainly the scalp. This is readily explained by the fact that scalp hair normally has a higher anagen percentage than other hair and is therefore more susceptible to mitotic inhibitors. The observation that the administration of 300 mg of heparin daily for seven days will induce telogen effluvium in virtually all subjects observed tends to minimize the importance of individual variations in patients. The conversion to telogen in these patients occurs a few weeks to a month or more after the heparin is given. Telogen percentage may rise to over 50 per cent, but, as in the post-partum situation, actual alopecia is not often manifest. Perivascular collagen degeneration has been seen in some histological studies, but the significance of this, if any, is unknown. Such changes have been seen also in other types of alopecia.<sup>19</sup>

#### IDIOPATHIC ALOPECIAS

##### A. Alopecia Areata

Although it may be somewhat arbitrary to designate this disease as "idiopathic," and those previously discussed as "physiologic," there is reason for doing so. Infantile alopecia and telogen effluvium can be demonstrated in most individuals under the proper circumstances, and the change in the hair is sufficiently predictable to give credence to

the pathogenic mechanisms proposed. Such relationships are not readily established in alopecia areata. It is clearly a disease entity and not just a physiological phenomenon. A single cause has not been established, but histologic observations attest to its basic inflammatory nature.

Alopecia areata has been the topic of several good reviews, the most recent and extensive of which is from the Mayo Clinic.<sup>24</sup> The incidence of this rather common disease has been about two to two and one-half per cent in the patients of large dermatology clinics. It is especially common among children and teenagers. It usually appears as one or a few bald patches on the scalp, although it may involve the whole scalp or even the whole body. Severe cases are more common in children. It is asymptomatic and the skin, except for the absence of hair, looks normal. The appearance of a depression in the involved areas is probably due to the loss of hair mass. In most cases regrowth occurs within a few months, although there is usually one or more relapses before regrowth is permanent. Individual areas often relapse or regrow independently of others. Initial extensive involvement, occurrence in very young children, and involvement in sites other than the scalp all portend a poorer prognosis for eventual regrowth. Permanent regrowth after total scalp alopecia occurs in only ten per cent of adults and hardly ever in children. Regrowth typically begins as pale vellus-type hairs that gradually assume the morphologic features of the surrounding hairs. In alopecia areata there are sometimes associated changes in other ectodermal structures. Pitting or brittleness of the nails occurs in four to 13 per cent. Posterior subcapsular cataracts have been seen occasionally in adults. About four per cent have vitiligo and about eight per cent have various thyroid gland disorders.

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Most studies indicate a familial incidence of around 20 per cent. However, rarely is the disease present in more than one relative. Also, considering the frequency of the disease, the significance of a 20 per cent familial incidence is probably less than it might appear initially. Those who consider genetic factors of importance state that the pattern is probably autosomal dominant with variable penetrance.<sup>25, 8</sup>

Traditionally, emotional crises have been considered important at least in precipitating alopecia areata. Estimates of the degree of association between the two vary greatly. Studies of this alleged relationship are all too few and too limited in scope to be of much value.

Attempts to establish a hormonal basis for this disease have been generally unsuccessful. Relationship of the activity of the disease to pregnancy is unpredictable except in individual cases, where repeated remissions or exacerbations have occurred in repeated pregnancies. Apparently it has long been tempting to speculate on a thyroid dysfunctional cause. However, among the relatively frequent cases of thyroid disease are hypothyroidism, hyperthyroidism, endemic goiter, thyroiditis, *etc.*, so that no thyroid hormonal pattern can be assumed. According to Rook, both hypothyroidism and hyperthyroidism tend to delay the onset of anagen phase and hence cause an increased telogen to anagen ratio.<sup>33</sup>

Most sources of information on the histopathology of alopecia areata emphasize the following features: A chronic inflammatory reaction is seen around the lower one-third of the hair follicle, primarily around the bulb. The dermal papilla begins to lose the strong staining reaction for alkaline phosphatase, which is characteristic of normal anagen follicles. The follicle becomes smaller so that it lies progressively higher in the dermis. Eventually the whole structure is abortive and produces little or no hair. A thickened connective tissue sheath remains behind as evidence of what was once a normal anagen follicle. At this time the appearance is much like that of an ordinary telogen follicle except for inflammation around the bulb. The hair root is pointed

rather than clubbed like a normal telogen hair.

Further observations of alopecia areata have revealed other similarities to telogen effluvium. Biopsies of the scalp at sites distant from lesions of alopecia areata, where the hair appears normal grossly, have revealed decreased normal anagen hairs, slight perivascular inflammation and areas of abortive follicles typical of alopecia areata. Similar but more pronounced changes, plus increased numbers of telogen follicles, have been seen in biopsies from the borders of alopecic lesions. Grossly these borders show thin, often broken hairs, that are narrowed at their insertion, resembling exclamation points. Thus alopecia areata seems to represent a combination of "telogen alopecia" and "dystrophic anagen alopecia."<sup>6</sup>

Cormia and Ernyey<sup>13</sup> have emphasized vascular occlusion as a possible pathogenetic factor. They feel that even though the inflammatory reaction seems to be the first recognizable event, vascular occlusive changes secondary to this may be the actual cause of the follicular shrinkage. They observe that in severe alopecia areata, *i.e.*, alopecia totalis, very little blood supply remains, especially around the bulb. Ikeda<sup>16</sup> has also observed small artery occlusion followed by thrombus formation early in the course of alopecia areata. With the regrowth of hair, whether spontaneous or hastened by intralesional injection of a corticosteroid, the inflammatory infiltrate resolves, the blood supply increases and the follicle returns to a normal anagen appearance. Although this evidence favors some vascular occlusive process in alopecia areata, such changes are not peculiar to this disease. In fact, most types of alopecia show histologically some decrease in blood supply. However they do not appear to be directly related to an inflammatory infiltrate as they do in alopecia areata.

Intralesional injection of corticosteroids, preferably of the insoluble types, is the best treatment presently available for alopecia areata. It appears that this treatment probably does not alter the ultimate prognosis but simply hastens regrowth in those lesions where regrowth is due in the future.<sup>26</sup> Unfortunately, intralesional steroid injection is sometimes attended by complications. The



usual ones are not ordinarily serious. Subcutaneous injection sometimes produces a temporary subcutaneous fat atrophy. Intradermal injection sometimes causes dermal atrophy which may be permanent. The most serious complication has been reported from France. Three young women whose anterior scalps were being injected for alopecia developed sudden blindness with head and eye pain. It was reasoned that forceful injection of a steroid particle suspension (Depo-Medrol® in two cases) entered a branch of the superficial temporal artery. From here there was retrograde flow into the anastomosing supraorbital branch of the ophthalmic artery and on into the ophthalmic artery, thence to the central retinal artery where sudden occlusion occurred.<sup>4</sup> Obviously injection into the scalp must be done carefully, despite the rarity of this complication.

#### B. *Pseudopelade* (Brocq, 1885)

Discussions of this type of baldness are usually characterized more by disagreement than by elucidation. This disagreement stems from the question of its existence as a discreet entity. Contrary to the original description of the disease as a primary, atrophic, scarring alopecia, some have preferred to think of it as secondary to lichen planus or discoid lupus erythematosus or something else.

The usual characteristics of pseudopelade are a patchy and confluent, insidious, asymptomatic, atrophic and cicatricial alopecia, according to Laymon and Murphy's description. It is seen in adults, mostly women, and is progressive and irreversible. The alopecic areas are depressed and glossy with obliteration of follicular orifices. Most observers recognize a faint erythema at the borders. Sometimes the differentiation from alopecia areata (syn. *pelade*) is not so clear as the classical description of pseudopelade implies. Histologically there is inflammation in the upper portion of the hair follicle with eventual destruction and obliteration of the follicle.<sup>32</sup>

Regarding the disagreement over the status of pseudopelade, it matters little whether Brocq's original cases represented truly a primary process or the residual of some inflammatory condition. The diagnosis is made entirely on *morphologic* grounds, and the scope of the diagnosis must be nar-

rowed as *etiologic* information is gained about various alopecias that may produce what some have called the "pseudopeladic state." As causes are discovered these alopecias must be removed from the pseudopelade category. Eventually the usefulness of this term may disappear.

#### HEREDITARY-PATTERNED ALOPECIA

This term refers to the very common frontal and occipital balding that begins at sexual maturity in men, and in women around the menopausal age, the so-called "diffuse female alopecia." In the male especially, the distribution of this alopecia differentiates it from others. There is progressive hair loss in the frontoparietal areas and, to a lesser degree, in the frontal area, and hair loss in an oval configuration at the crown. These areas often merge to produce the familiar marginal "horseshoe" of remaining hair.

It should be realized that there is normally a limited frontal and parietal recession of the hairline in nearly all persons after puberty. Although this is hormonally induced it is separate from true patterned alopecia.

Diffuse alopecia is the female counterpart of patterned alopecia in males. There is a less severe progressive hair loss in the vertex and frontoparietal areas, and this is usually first observed as an increased amount of hair clinging to the hair brush. This may be gradual or intermittent, and the hair may become less manageable. Some patients notice increased oiliness of the scalp. There may be vague symptoms of tingling, itching, or a crawling sensation of the scalp. In most cases there is no significant regrowth. In neither men nor women is there complete baldness. Close inspection always reveals considerable numbers of fine, short, pale vellus hairs on the apparently bald areas. Quacks often take advantage of the fact that patients do not notice these hairs, and point them out as evidence of hair growth after whatever treatment has been given.

There are three prerequisites for the development of hereditary-patterned alopecia in both males and females: 1) The presence of sufficient circulating levels of androgens, *i.e.*, sexual maturity, 2) the genetic predis-



position (autosomal dominant, incomplete) to develop the condition, and 3) the age of late adolescence or older.

Eunuchs and hypogonadal females do not develop this alopecia because they lack testicular and ovarian androgens respectively. Apparently adrenal androgens are insufficient to induce the condition. With proper hormonal replacement therapy, and with the genetic predisposition, these people would develop alopecia. Since the inheritance is dominant, both heterozygotes and homozygotes are involved. It tends to be more severe in the latter.

Histologically there is progressive shrinkage of follicles and hairs in a random fashion. The connective tissue sheaths of the follicles remain behind. The anagen period is shortened, resulting in shorter hair growth and more telogen hairs. Eventually only tiny vellus hairs are produced from miniature follicles, and many follicles have completely degenerated. The sebaceous glands remain, and are proportionally enlarged if not actually enlarged. There is a general reduction in blood supply to the scalp in patterned alopecia as there is with increased age normally. This has not been shown to be a causative factor.<sup>13</sup>

Papa and Kligman were able to induce regrowth of perhaps ten to 15 per cent of terminal scalp hair in bald men of various ages by rubbing one per cent testosterone propionate ointment on the scalp. Others have been unable to duplicate their results. The paradox is apparent here, that circulating androgen induced the baldness in the first place and topical androgen seemed to reverse it. Obviously the local effects on the hair follicle must be pharmacologic rather than physiologic.<sup>28</sup> Testosterone propionate is apparently well absorbed percutaneously, and could theoretically at least cause pituitary inhibition. There has been considerable interest recently in the surgical treatment of hereditary-patterned baldness by the multiple punch graft technique. The various aspects of this treatment have been discussed at length in dermatological literature during the past several years.

Studies on urinary androgen excretion in women with diffuse alopecia have not been

impressive generally. However, one study has revealed significantly elevated urinary testosterone excretion in 30 women with diffuse alopecia when compared to control levels.<sup>2</sup> Considerable attention has been given to possible thyroid dysfunction in women with diffuse alopecia. There is little evidence to support such a relationship and those allegations have been based primarily on observations that some patients have seemed to improve while taking thyroid. It is well recognized that myxedematous persons tend to have sparse "coarse" hair and rough scaly skins. Careful studies of these observations are also lacking. The impression of coarseness is probably due to dryness. Thyroid hormone deficiency apparently does cause a slowing of mitoses in the skin with retention of stratum corneum and a decreased sebum production. The sparseness of the hair probably reflects decreased mitosis in the hair matrix and breakage of hair shafts.

Chapman and Main have reported on diffuse thinning of scalp hair in two post-menopausal women who were hypothyroid from long-term iodide therapy for asthma. The patients became euthyroid and grew their hair again after discontinuing the iodides.<sup>9</sup>

#### TRACTION ALOPECIA

This fairly common type of alopecia is seen principally in women and girls who repeatedly roll their hair tightly on brush rollers or who wear their hair in braids, pigtails or a bun. In each of these situations the hair in various places is subjected to long periods of firm traction. As a result, hair is either slowly pulled out or stretched and broken. Apparently no histologic studies are available to indicate whether the traction induces a premature telogen phase or inflammatory reaction, or whether the hair is simply pulled out and the remaining matrix cells continue to proliferate and produce a new hair.

The areas affected depend, of course, on the site of the greatest traction. With ponytails and buns the greatest traction is marginal, *i.e.*, along the temporal and retroauricular borders. With braids the midline of the scalp sagittally also is affected. Brush rollers induce alopecia in multiple patches,



marginally, sagittally and at the frontal border. Close inspection reveals various degrees of hair loss in the various patterns, short tapered hairs of new anagen growth, and broken off hairs. Occasional folliculitis may be seen but the scalp otherwise appears normal. If the trauma is discontinued regrowth usually is complete in three to four months, although scarring from folliculitis and severe trauma may cause some permanent loss.<sup>21</sup>

Savill has observed that similar problems result from the use of hair brushes with sharp-edged bristles. Apparently vigorous and frequent brushing can cause fracturing, fraying and even extraction of hair. Brushes with natural rather than synthetic bristles are less likely to cause this.<sup>34</sup>

#### MISCELLANEOUS TRAUMATIC ALOPECIAS

Certain rare, sometimes familial, structural abnormalities of the hair, including *trichorrhexis nodosa* (intermittently splintered hair), *monilethrix* (beaded hair) and *pili torti* (twisted hair) are characterized by fragility and breakage of the hair of the scalp and other areas with minor trauma. These abnormalities are sometimes parts of congenital neuroectodermal syndromes, and have been linked with arginosuccinic aciduria, an abnormal urinary amino acid excretion pattern. However, recent studies have shown, in the case of *trichorrhexis nodosa*, that the urine is usually normal, the patient is healthy, and that the splintering and fracturing are caused by trauma especially brushing, teasing, and scratching.<sup>10</sup> In fact this abnormality can be produced in normal hair *in vitro* by subjecting it to artificially controlled manipulation of a specific type.<sup>27</sup>

The problem of *trichotillomania* (pulling of hair by the patient) is not encountered frequently but is a difficult management problem. Patients are usually loath to admit that they have pulled out or broken their hair as a result of some nervous habit or psychoneurosis. Indeed, they may not even be aware of it. The appearance is usually that of broken hairs and loss of hairs in one or more areas where the patient has continually pulled or twisted or curled the hair around a finger or scratched the scalp.

The areas involved cannot be explained on the basis of brush rollers or other cosmetic procedures. The treatment is directed at convincing the patient of the nature of the difficulty and sometimes the use of psychotherapeutic measures. The problem may be solved by having the patient wear a wig so the hair is not easily accessible.

*Postoperative pressure alopecia* has been listed as a distinct entity. Abel and Lewis<sup>1</sup> reported eight cases in young and middle aged women. These women had been on the operating table in the Trendelenburg position, for six hours or more in most cases, for gynecologic surgery. As a result of continuous pressure on the supraoccipital area there was rapid hair loss in this area from three to 28 days postoperatively. Most of the patients had been hypotensive for a time during surgery. Five of the eight had edema and exudation of the affected area within two days. Otherwise the patches resembled alopecia areata. Regrowth occurred in all cases within three months.

The histological findings were interesting. The outstanding change was an obliterative vasculitis of the middle and lower dermis, along with shrinkage and shortening of the hair follicle. A perivascular chronic inflammatory infiltrate was seen and in two cases panniculitis occurred. A similar alopecia has been observed over lumps in the scalp, in bruises, and in areas of furunculosis where scarring was minimal.

#### POST-INFLAMMATORY ALOPECIAS

Included in this category are those situations in which inflammation has been severe enough to cause destruction of the hair follicles and scarring. It is not the purpose of this paper to dwell on these. Some have been discussed already under other headings. However, one of these, alopecia mucinosa, is a unique entity with possibly serious implications and deserves special mention.

Alopecia mucinosa was described by Hermann Pinkus in 1957, from observations on six cases.<sup>29</sup> These patients had one or more alopecic plaques on the head and extremities. The plaques were of slow onset and progress, yellow-brown, variably indurated, usually with patulous follicles and fine scale, and were asymptomatic. Children and adults



of both sexes were involved. Histologically there was mucinous edema of the hair follicles and sebaceous glands until the whole pilosebaceous apparatus became an edematous bag. There was variable chronic inflammatory infiltration with secondary destruction of parts of the follicle. Pinkus believed the disease was basically inflammatory. However, Kim and Winkelmann state that the mucinous infiltration usually precedes the inflammatory reaction.<sup>17</sup>

Five years later Pinkus discussed the follow-up of his original cases and compiled information on 63 additional cases from the literature.<sup>30</sup> Some lesions appeared as groups of follicular papules. Some follicles were plugged rather than patulous, and contained stubby hairs. Still other lesions were moist and appeared eczematous. Hypesthesia was reported in some. Histochemical studies revealed increased amounts of glycogen in the follicles, and indicated that the mucinous material was acid mucopolysaccharide and mucoprotein. Most cases were self-limiting within a few months but in a few, an association with lymphoma was seen. Four of the patients either developed lymphomas or their alopecia mucinosa was secondary to pre-existing lymphomas. One-half of all the cases were under the age of 30, and one-third were in the 11-20 age group. Half had more than two lesions. In a later discussion,<sup>31</sup> the clinical appearance has been divided into three categories: (1) like lichen spinulosis (groups of follicular papules with stubby hairs), (2) coalescent follicular papules with an eczematous surface, and (3) red boggy infiltrated plaques. The first type is the most common and most benign. The second and third types are seen in adults only, are more chronic, and have a denser inflammatory infiltrate. These types include those that are lymphomatous, which, according to Braun-Falco, always occur in patients over 40 years of age, and constitute less than five per cent of all cases. In the cases reported by Kim and Winkelmann, some lesions changed from that of grouped follicular papules to plaques. Also, in 40 per cent of their cases alopecia was not prominent. The scalp was involved in 25 per cent of their cases.<sup>17</sup>

Treatment with topical corticosteroids or superficial x-ray have been effective in some cases. In those cases secondary to lymphoma, the treatment is that of the primary disease.

#### ALOPECIAS DUE TO MITOTIC INHIBITORS

Almost any antimitotic drug, alkylating agent or otherwise, may cause alopecia if given in sufficient amounts. The worst offenders are vincristine, cyclophosphamide, and 5-fluorouracil. Since these drugs affect only actively dividing cells, the resulting alopecia can be called "anagen effluvium." However, local application of colchicine may induce a change to catagen phase. Smaller amounts of mitotic inhibitors will cause only a temporary suppression or cessation of mitosis. The result is a constriction in the hair shaft, of such length as to reflect the period of effect of the drug, but the hair cycle is not materially altered. Heparin-induced alopecia already has been discussed in the context of induction of the telogen phase. This drug is also a mitotic inhibitor and may cause alopecia in this way also. The coumadin compounds, heparinoids, paritol and dextran sulfate also cause alopecia. Apparently the mechanisms by which these compounds inhibit mitoses or induce telogen has not been elucidated.<sup>15</sup>

An ingenious method has been devised by which alopecia from intravenous antimitotic drugs can be inhibited. A special sphygmomanometer cuff is placed on the head just below the scalp margins and is inflated to above systolic pressure. The blood supply of the scalp is thereby occluded during and for five minutes after intravenous administration of the drug.<sup>36</sup>

#### MISCELLANEOUS ALOPECIAS

No attempt is made to discuss all reported causes of alopecia, but only those in which observations have been of sufficient depth to give some consideration to pathogenesis.

Several years ago a hypocholesterolemic agent, MER/29 (Triparanol®) enjoyed brief popularity. It soon became apparent, however, that a large percentage of the patients receiving this drug developed side effects, the most notable of which was ichthyosis.



Subsequent to this some patients developed progressive diffuse alopecia of the scalp, eyebrows, and pubic hair. The process was reversible when the drug was discontinued. An analysis of the cases from the Mayo Clinic indicated that 250 mg of the drug daily would not cause alopecia but that 750-1000 mg daily nearly always did.<sup>22</sup> The mechanism of this process was never elucidated. An antimitotic effect is unlikely because eyebrow and pubic hair grow quite slowly and are seldom affected by known mitotic inhibitors. A more likely explanation is defective keratin synthesis since the drug interferes with the synthesis of cholesterol, a significant component of keratin. The defect possibly was simply more obvious in the scalp, eyebrows, and pubis since hair is present in greatest density in these areas.

Another well-recognized cause of alopecia is thallium poisoning. Thallium acetate has been used in the past for epilation in treatment of ringworm of the scalp. However, it is not regularly effective in removing all the affected hairs; furthermore, its great toxicity makes it unsuitable for therapeutic use. In fact, its principal use now is as a rodenticide. Its toxic effects are cumulative and are similar to those of lead. It is slowly excreted in the urine and bile.<sup>14</sup>

Ingestion of seven to eight mg/kg body weight causes anagen effluvium of an unphysiologic sort, with intrafollicular breakage of scalp hair and a high rate of conversion to catagen phase. With subsequent hair growth, as in other situations of excessive catagen and telogen conversion, a compensatory pause to re-establish non-synchronous cycles must be assumed.<sup>3</sup>

An interesting phenomenon is the occurrence of patchy alopecia on a clinically normal appearing scalp in patients with cutaneous metastatic disease, especially from the breast. This has occurred with intraductal and scirrhous carcinomas and with ordinary adenocarcinoma. A resemblance to alopecia areata is apparent in early stages, but later the lesions tend to become red, nodular and indurated.<sup>11</sup> Here it is possible that tumor cell infiltrates of blood and lymph vessels not yet clinically visible are of sufficient extent to compromise the blood supply of hair follicles, or perhaps to destroy their matrices.

The foregoing remarks for the most part have stressed the pathogenesis of various clinical types of alopecia. Notable is the great similarity of pathogenetic mechanisms among greatly dissimilar clinical patterns. The conclusion is that regardless of what pathophysiology causes the alopecia, the response mechanism of the hair follicle tends to be the same or similar.

This is not unique to the hair follicle, nor does it obviate the need for recognition of the clinical types of alopecia. Management and assessment of prognosis must still be based largely on clinical diagnosis. As our present, limited understanding of pathogenesis expands, hopefully so will our ability to treat these patients more rationally and less empirically. □

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# Two-Team Abdominal Perineal Operations

ROBERT L. SCHMITZ, M.D.

*Time can be saved, shock reduced,  
dissection facilitated when two surgical  
teams work synchronously on  
pelvic cancer.*

COMBINED abdominal perineal operations have been done by the two-team technique since the late 1930's when it was introduced in London, England. Most surgeons who use it do so only in resection of the rectum, but it is of value in many other situations, and we have used it for excision of cancers arising in the bladder, urethra, vulva, vagina, cervix, endometrium, myometrium, ovary, anus and for coloprotectomy in chronic ulcerative colitis.

## ADVANTAGES AND DISADVANTAGES

When the technique was introduced, it was said that two surgical teams working at the same time in the same patient would increase the trauma and blood loss to serious levels and give rise to more shock. This did not seem to be the case to us, but we felt the question should be settled by objective methods. Accordingly, we compared the first 20 cases of two-team resection of the rectum with 20 consecutive one-team operations done immediately before by the same surgeons for the same disease. The average operating time was 45 minutes less with the

two-team technique; in fact, the *average* time for the two-team operation, one hour and 50 minutes, was slightly less than the shortest time for any of the one-team operations, one hour and 55 minutes. The amount of whole blood transfused by the two groups during surgery was the same. That the two-team cases did not require more blood speaks against the technique being more shocking.

The operative courses in the two-team cases were smoother as judged by the vital signs and the anesthesiologists' notes. The two series had about the same number of postoperative complications and the same length of stay in the hospital. All in all, there seems to be no increased risk with this technique.

The two-team technique is particularly useful in removing bulky tumors and, because the pelvis is empty, it allows easier reconstruction of the pelvic peritoneum in closing. Hemostasis is also facilitated in that a bleeder not available readily to one team is usually readily accessible to the other.

There are some disadvantages to two-team operations, but they are minor. Two skilled surgeons and their assistants must be at hand. This is no problem in teaching centers and clinics, but it may present a problem to the surgeon in solo private practice. There is some crowding of both the abdominal and the perineal fields from the position of the patient's legs, but adjustment is not difficult. There is a greater danger of trauma and blood loss so it is important to observe good surgical principles very carefully, especially in regard to gentleness and hemostasis.

Presented at the Oklahoma City Clinical Society Fall Conference, October 2nd-4th, 1967, in Oklahoma City.



### ANESTHESIA

We prefer general inhalation anesthesia with intratracheal intubation, but continuous spinal may be used. In the larger resections, such as exenteration, we employ hypotensive technique with trimethaphan-camsylate (Arfonad). We have not used hypothermia.

### POSITIONING THE PATIENT

No special tables, rests or stirrups are needed. Once asleep, the patient is placed in the lithotomy position with the thighs flexed  $45^{\circ}$  to  $60^{\circ}$  at the hips, the legs flexed  $80^{\circ}$  to  $90^{\circ}$  at the knees and the legs widely spread. The rump is elevated off the table using a sandbag or folded blanket under the sacrum which should be extended over the end of the table a short distance.

Next, the table is tilted  $10^{\circ}$  to  $20^{\circ}$  into Trendelenburg position and a large neurosurgical instrument table is brought over the forward end and lowered close to the patient's thorax so that it will not interfere with the abdominal surgeon's elbow. The anesthesiologist's area must be respected, of course.

The rectum is emptied of any liquid using a large rectal tube and suction after which a double pursestring silk suture is sewn about the anus.

The abdominal and perineal fields are scrubbed with soap and water and then painted with benzalkonium chloride (Zephiran).

The patient is draped with half sheets: One beneath the rump tucked in and clipped to the skin of the sacral area; one folded across and around each leg; one placed along each side and over the edge of the neurosurgical table above; and one across the patient and table transversely. Thus, the abdominal and perineal fields are one.

A sterile bulb catheter is inserted into the bladder. A sterile collecting bag or glove is fastened to the open end and placed along one groin where it is fastened to the drapes. In the male, a moist towel is passed beneath the scrotum and over each groin thus exposing the perineum.

The perineal surgeon sits on a stool; his assistant or assistants stand outside the extremities and work over them; his nurse uses a large, low, mobile instrument table which she can move into place behind him as she stands at his right or left side.

The abdominal surgeon and his assistant or assistants stand at either side of the patient's abdomen; his nurse stands on a high platform alongside the neurosurgical table and opposite him.

The basic technique of the various two-team operations does not vary significantly from that of the corresponding one-team operations. The work is simply shared by the two teams working simultaneously.

### RESECTION OF THE RECTUM

The abdominal team begins with a midline suprapubic incision. After operability has been established, a silk ligature is tied around the superior hemorrhoidal vessels and the first sigmoid vessels, at any convenient place, to block venous embolization of tumor cells. Umbilical tape is tied around the sigmoid just distal to the point where it will be divided for colostomy to prevent retrograde flow of exfoliated tumor cells. Usually we do not remove the inferior mesenteric vessels for rectal cancers.

At this point, the perineal team may begin to work. The first part of the abdominal dissection is routine. The mesosigmoid and its vessels are clamped, cut and tied in bundles from the sigmoid arch to the superior hemorrhoidal vessel origins, then it is slit along its root from this point to the cul de sac.

The ureters are exposed from the iliac vessels to the ureterovesical juncture. The hollow of the sacrum is entered and blunt and sharp dissections are carried downward until the perineal dissection is encountered.

Dissection is transferred to the anterior plane of excision. *In men*, the bladder and rectum are pulled upward exposing the cul de sac and a plane of cleavage is established from one ureterovesical juncture to the other and then downward between the bladder and rectum to Denonvilliers' fascia over the prostate. *In women*, the uterus and rectum are pulled upward and the dissection through the cul de sac is extended into the rectovaginal septum or through the pos-



terior fornix into the vagina. It is in these dissections that the two teams can be of great assistance in guiding one another by frequent probing with instruments and palpation by fingers.

Only the triangular ligaments (lateral rectal stalks) through which the middle hemorrhoidal vessels run remain to be divided and tied. This can be done by whichever team finds it easier or they may be clamped by one and tied by the other.

Let us review the perineal dissection up to this point. Elliptical incisions are made from the perineal body around the anus to the tip of the coccyx.

*In the male*, the incisions are deepened to the median raphe of the bulbocavernosus muscle and the coccyx and obliquely to the ischial tuberosities laterally.

Anteriorly, the plane is carried along the bulbocavernosus muscle to Denonvilliers' fascia until the abdominal dissection is reached. Frequent palpation of the catheter in the urethra is helpful during this step.

Posteriorly, after the coccyx is reached, the anococcygeal ligament is divided. We remove the coccyx only if it is angulated forward enough to be troublesome. A finger is pushed into the retrorectal space sweeping upward in the hollow of the sacrum until the abdominal dissection is reached.

Moving anteriorly again, with the abdominal team protecting the ureters and bladder, a finger is hooked above first one and then the other levator muscle; this muscle is clamped and divided in segments as close to its lateral attachments as possible.

The lateral rectal stalks are divided and the specimen is delivered to the abdominal team.

*In the female*, the initial elliptical incisions are deepened as in the male but anteriorly the plane is through the rectovaginal septum upward into the posterior cul de sac. A finger in the vagina and digital pressure downward in the cul de sac by the abdominal surgeon facilitates this dissection.

In lesions lying in the anterior rectal wall it is better to sacrifice the entire rectovaginal septum and posterior vaginal wall. In this instance, the elliptical incisions in the perineum are brought through the posterior vulvar labia into the vagina and

thence along the posterolateral vagina into and through the posterior fornix.

After the specimen has been delivered to the abdominal team, the perineum is closed. No pack is used unless hemostasis is inadequate. The subcutaneous tissue and skin are closed tightly around a sump drain.

When the abdominal team receives the specimen, the sigmoid is divided at the site selected for colostomy, thus freeing the total specimen. The pelvic peritoneum is closed, the colostomy is constructed in the left lower quadrant and the abdominal wound is closed.

#### EXENTERATION OPERATIONS

The term exenteration denotes removal of the pelvic peritoneum, fat, lymph tissues and genitalia plus the bladder (anterior exenteration) or the rectum (posterior exenteration) or both (total exenteration). The largest number of these procedures is done for cancer of the genitalia.

Usually, these operations are accomplished via an abdominal route alone. However, when cancer extends low in the vagina or rectum or is primary in the urethra, vulva, vagina, lower rectum or anus, it is advisable to do a perineal excision in continuity.

Earlier, we did combined abdominoperineal exenterations with one surgical team, first completing the abdominal part with the patient supine and then the perineal part with the patient in the lithotomy position. But our experience with two-team resection of the rectum led us to apply this technique to pelvic exenteration as well.

As our experience with the two-team approach increased, perineal excision became a part of almost every exenteration whether partial or total.

Pelvic exenterations are formidable operations plagued by numerous complications

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## Operations / SCHMITZ

which often lead to prolonged hospitalization. They require from three to nine hours to complete; the mortality rate varies in different series from five to 30 per cent; and the five-year salvage rate is reported ten to 25 per cent.

The technique of total exenteration is as follows: The patient is prepared as for resection of the rectum. In addition, a pack is placed in the vagina and a pursestring of silk closes the introitus. The abdominal team makes a lower midline incision veering to the left of the umbilicus. A transverse incision would interfere with the placement of the ileostomy and colostomy stomas.

If there are no metastases beyond the pelvis and the local lesion is resectable, the peritoneum is incised on the right side by grasping and dividing the ovarian ligament and its vessels. The opening is extended upward along the iliac vessels to the aortic bifurcation and downward to the internal inguinal ring and then anteromedially into the prevesical space to meet the abdominal incision.

The lymph nodes are dissected from around the iliac vessels and the obturator fossa sparing the obturator nerve but taking the vessels. The hypogastric artery is ligated in continuity as it is encountered.

This same dissection is done on the left. As soon as both hypogastric arteries are tied, the perineal team begins to work.

The ureters are divided as low as the disease will permit and the proximal ends are tied to allow them to dilate with urine.

The rectum is mobilized by dividing the superior hemorrhoidal vessels and the mesosigmoid in the usual fashion.

The perineal dissection up to this point is as follows: Elliptic incisions are made from just above the clitoris, around the vulva and anus to the tip of the coccyx.

The incisions are developed inward to the symphysis pubis, posterolaterally along the rami to the ischial tuberosities and thence posteromedially to the coccyx.

Dissection is extended upward, along the inner surface of the ischium to the lateral attachments of the levators.

The anococcygeal ligament is divided posteriorly and the urogenital fascia anteriorly. Now a finger can be hooked above the levator

on either side and the muscle clamped, cut and tied in bundles at its most lateral attachments.

From this stage, the two teams work in unison to mobilize the bladder and urethra from the pubis and the rectum from the sacrum. The lateral lymphatic "webs" are clamped and divided in segments. Often the perineal team can better see and clamp the various branches and tributaries of the hypogastric vessels as they traverse the sacral foramina and the webs while the abdominal team can tie them more easily after the specimen is delivered from the pelvis.

The specimen is delivered upward and totally freed by clamping and dividing the sigmoid.

The pelvis is packed from below for hemostasis as well as to keep the intestines out of the pelvis until they have become adherent within the peritoneal cavity. A colostomy is established through the abdominal wall of the left lower quadrant. An ileal conduit is used for urinary diversion and brought through the abdominal wall in the right lower quadrant. The abdominal incision is closed without drainage.

### RESECTION OF THE BLADDER

The results of total cystectomy for bladder cancer have been disappointing. In an effort to improve them, we are doing a radical two-team operation in selected cases.

In men, the urethra is divided distal to the prostate, and the periprostic tissues and total prostate are removed along with the bladder and obturator lymph nodes. An ileal conduit is used for urinary diversion.

In women, the entire urethra and anterior vagina are included with the bladder and obturator nodes and again an ileal conduit is established.

### SUMMARY

In summary, we can say that two-team operations lighten the load of the individual surgeons in any particular case; they are not more traumatic to the patient; they decrease operating time and are probably more adequate as cancer operations in many instances. □

55 East Washington, Chicago, Illinois



# Chemoprophylaxis for the Prevention of Tuberculosis

**Ad Hoc Committee on Chemoprophylaxis**  
STEFAN GRZYBOWSKI, M.D.  
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J. A. PETER TURNER, M.D.  
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the Tuberculosis Program)

SINCE THE publication in February, 1965, of a statement by the American Thoracic Society Committee on Therapy entitled "Preventive Treatment in Tuberculosis," the indications for chemoprophylaxis have widened. The National Tuberculosis Association Committee for the Guidance of the Tuberculosis Program established an Ad Hoc Committee on Chemoprophylaxis with representation from the ATS Committee on Therapy, the ATS Committee on Respiratory Diseases in Children, the United States Public Health Service, and the NTA Committee for the Guidance of the Tuberculosis Program, which prepared the following statement:

Antimicrobial drugs, which have revolutionized the therapy of tuberculosis, can also be effectively used in chemoprophylaxis, the prevention of disease in the infected individual. Chemoprophylaxis presumably acts by diminishing the bacterial population in "healed" or invisible lesions of the person taking the drug. It is in reality treatment of infection and prevents clinical disease from developing or relapsing.

A substantial and growing body of scientific data testifies to the value of antituberculosis drugs in the prevention of clinical tuberculosis. Extensive trials conducted by the United States Public Health Service show a consistent reduction of morbidity in treated groups; it seems reasonable to expect that chemoprophylaxis can reduce future morbidity from tuberculosis in these high risk groups by some 50 to 75 per cent. The extensive use of chemoprophylaxis now would likely reduce by 300,000 the total number of cases in the United States in the next 15 years.

Chemoprophylaxis can be instituted on a widespread basis through two major means.

1. The family physician, pediatrician or internist can institute chemoprophylaxis on an individual basis in patients who have a high risk of developing active tuberculosis.

2. Community agencies can work with the high risk groups that can be approached through a public health program. In many instances, these persons are already known to health departments and their names are



## *Tuberculosis*

in the files of closed cases and in the reports from screening programs.

### DRUGS USED IN CHEMOPROPHYLAXIS

A single drug, isoniazid, is generally used for chemoprophylaxis in a dosage of 300 mg. per day for adults and 10 mg. per kilogram body weight per day for children, not to exceed 300 mg. per day, to be administered in a single daily dose for a period of 12 months.

There are virtually no side effects. The toxicity of this drug is low, apparent in only 0.2 to 0.4 per cent of those taking the drug, and it is easily reversible. Follow-up studies for periods of up to 15 years of groups of people who have been treated with isoniazid have revealed no evidence of long term deleterious effects from its use. Isoniazid is also inexpensive.

### MOTIVATION OF PATIENT

With adequate motivation, most patients will accept and stay on drugs for the full course. Enthusiasm and encouragement by the physician, nurse and other health personnel involved are key factors. At the beginning of a course of prophylaxis, the physician should take time with the patient to establish understanding and motivation. Subsequently there should be regular visits with the public health nurse either in the clinic or at home to reinforce the physician's teaching. Patients should be helped to develop their own systems of reminders to take drugs daily. In addition, maintaining the drug schedule should be made easier for patients by removing obstacles such as difficulties in getting to clinics for follow-up visits or in obtaining drug refills.

### PERSONS RECOMMENDED FOR CHEMOPROPHYLAXIS

Every positive reactor is at some risk of developing active disease. Thus, any person found to have a reaction of 10 mm. or more to the Mantoux test using five TU of PPD should receive chemoprophylaxis whenever he is identified.

Since in the immediate future it is not practical to test and treat the entire popu-

lation of positive reactors, priorities must be set for public health programs taking into consideration the relative risk of developing active disease, the opportunities of infecting others particularly children, and the resources available in the community. The total cost must also be taken into account.

For certain groups, chemoprophylaxis is mandatory. These groups include certain inactive cases, certain special clinical situations, contacts, converters and positive reactors among young children and adolescents.

### PERSONS WITH INACTIVE TUBERCULOSIS

First priority for chemoprophylaxis should be given to persons with inactive tuberculosis. These include:

1. Ex-patients; persons who have had active tuberculosis and had no drug therapy or had inadequate drug therapy.

2. Persons with roentgenographic findings consistent with healed adult-type pulmonary tuberculosis and a positive tuberculin test. (Some persons over age 55 may be negative to five TU of PPD and a larger dose of tuberculin may be necessary to elicit a reaction.)

It is essential to exclude active disease in these groups by bacteriological examinations, comparison with previous radiological findings, and other investigations, because people with active disease require more intensive drug treatment.

The rate of reactivation among these inactive cases is between 0.5 per cent and 2.0 per cent annually. Many of these cases are known to health departments. It is a worthwhile program to review the records of inactive cases, and recall them for assessment of the need for chemoprophylaxis. Such a program directed towards a well delineated group would be more practical than surveying the whole community.

### SPECIAL CLINICAL SITUATIONS

A person with a positive tuberculin test is in danger of activation or reactivation of tuberculosis in certain clinical situations. Such a person should receive chemoprophylaxis whether or not he has been treated with isoniazid before: if he is placed on corti-



costeroid treatment, if he undergoes gastrectomy, if he has reticuloendothelial disease such as leukemia or Hodgkin's disease, or if he has a period of instability of severe diabetes. In the case of a pregnant woman who has inactive tuberculosis previously untreated with chemotherapy, or who has X-ray shadows consistent with inactive tuberculosis, chemoprophylaxis should be started in the last trimester and continued for a year.

When children with a positive tuberculin reaction develop measles or whooping cough they should receive eight weeks of chemoprophylaxis if they have been treated before; the course of chemoprophylaxis should be extended to 12 months if they have not received previous treatment.

#### CONTACTS

Contacts of recently discovered new active and reactivated cases of tuberculosis show a high incidence of this disease. Contacts should be examined and those diagnosed among the contacts as having tuberculosis should be reported and treated.

All household contacts of a reported active case of tuberculosis should receive chemoprophylaxis for 12 months if their reaction to the Mantoux test with five TU of PPD is five mm. or more of induration. In such instances, a five mm. reaction is most likely the result of exposure to tuberculosis and not a cross reaction. Those household contacts who show negative Mantoux tests should be retested every three months until

at least three months have elapsed since the last exposure. If the skin test converts, chemoprophylaxis should be instituted.

An alternative approach is to give chemoprophylaxis to all household contacts, including those with negative tuberculin tests. Positive reactors remain on the drug for the full course. Negative reactors should be retested three months after their last contact with the active case. If the contact has been assuredly broken and if they are still negative to tuberculin, chemoprophylaxis may be discontinued. When exposure may be continuous, it is desirable to give chemoprophylaxis to tuberculin negative contacts for as long as exposure continues. This may also be advisable in epidemics in closed groups and in situations where it is impossible to retest the negative reactors at regular intervals.

#### OTHER POSITIVE REACTORS

In addition to the positive reactors described above, chemoprophylaxis should be given to the following reactors with negative roentgenograms:

1. Converters: Known converters of all ages should receive chemoprophylaxis.
2. Positive reactors under age 20: Chemoprophylaxis is mandatory for positive reactors through the age of school entrance and for teenagers because the risk attending tuberculous infection is considerably higher in these age groups. □

Approved May 21st, 1967 by the NTA Committee for the Guidance of the Tuberculosis Program and the American Thoracic Society Executive Committee. Accepted by the NTA Board of Directors on May 27th, 1967.

## A POINT TO PONDER

During a debate on the revision of tariff laws of the United States in the year 1820, the honorable Henry Clay made the following comment:

"There are abuses incident to every branch of industry, to every profession. It would not be thought very just or wise to arraign the honorable professions of law and (medicine), because the one produces the pettifogger, and the other the quack."



# Aerosol and Nebulization Therapy in Infants and Children

ROBERT L. HARRIS, M.D.\*

*Although increasing in popularity, aerosols may not be superior to more standard therapeutic modalities. This paper discusses the physical properties of aerosols and their use in clinical pediatrics.*

## NEBULIZATION AND AEROSOL THERAPY

THE INHALATION of active pharmacologic agents is finding increasing use in clinical pediatrics as better and more sophisticated equipment becomes available. It is imperative that practicing pediatricians be familiar with the advantages and disadvantages of this therapy in order to use it wisely and with discretion in the various childhood respiratory problems. In this brief review, emphasis will be placed on basic underlying principles rather than specifics. The first part of the paper will deal with the use of various categories of pharmacologic agents used in aerosol form. The second part will deal with the use of inhaled water both as simple humidification and as an aerosol.

From the Department of Pediatrics, the Pediatric Pharmacology Unit, Children's Memorial Hospital, University of Oklahoma Medical Center, Oklahoma City, Oklahoma. Presented at Pediatric Postgraduate Seminar, "Respiratory Disorders in Infants and Children," April 13, 14 and 15, 1967, at the University of Oklahoma Medical Center.

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To begin with, let us define an aerosol as the suspension of a liquid in a gaseous phase. The liquid retains its physical identity and can be seen with the naked eye. Aerosolization or nebulization is, of course, the process of forming an aerosol and can be accomplished by any of the commercially available nebulizers. Historically, the earliest aerosol used in clinical medicine was simple water mist or steam and its use in the treatment of asthma was first described by Moses Maimonides in the twelfth century.<sup>1</sup> One must distinguish between water mist which is a true aerosol and humidification which is simply the measure of dissolution of water vapor in air. Humidification cannot be seen since the water in this form does not retain its physical identity. Water mist is a true aerosol and the water particles can be seen with the naked eye. Obviously there is a relationship between the two since, as humidity increases and rises above 100 per cent, the air becomes supersaturated with water vapor and a mist or aerosol is formed. Clinically, this differentiation is of more than academic or pedagogical interest since it is now well established that humidification is very useful in the therapy of a number of respiratory problems in pediatric patients. The usefulness of water mist, however, as an added benefit beyond that obtained from humidification alone, remains to be proved.

**Indications:** Theoretically, nebulization therapy appears to have several advantages. One would expect that if a high local concentration of any pharmacological agent were deposited on the respiratory mucosa, significant systemic or toxic effects might



be avoided. Moreover, since it has now been shown that a droplet will course through the tracheobronchial tree a distance that is inversely proportional to its size, it should be possible with some manipulation to deposit the active pharmacological agent almost exactly where we would like it. However, major technical problems are involved and thus far it has proven impossible to produce a stable particle of uniform size that will not absorb water in traversing the respiratory tract. Thus, the usefulness of nebulization therapy is limited. Moreover, one often runs into problems of dosage difficulties due to the high degree of absorbability of a number of the pharmacological agents used in aerosol form.

Probably at one time or another, practically every group of drugs has been used in aerosol form but these are now given by more conventional methods because of the reasons already listed. Basically, there are now four indications for using aerosol therapy in infants and children. These are 1) attempts to decrease mucosal edema, 2) attempts to decrease the viscosity of tracheobronchial secretions, 3) attempts to decrease bronchiolar spasm and 4) attempts to combat pulmonary infection. Hormones, enzymes, bronchodilators, antibiotics, mucolytic agents and simple humidification all have been used to alleviate these conditions with variable results. The hormones used most extensively have been adrenocortical steroids which have proven rather disappointing. When given in amounts sufficient to cause a pharmacological response, one generally sees about the same degree of systemic effect as when the hormone is administered orally or parenterally.<sup>2, 3, 4</sup> Moreover, a number of cases of oral thrush and candidiasis of the larynx have been reported in conjunction with steroid nebulization.<sup>5</sup> Also, one should always remember that children tend to develop a psychic dependence on the nebulizer which can raise a number of problems in terms of the total treatment of the asthmatic child.

A variety of enzymes have also been used in aerosol form especially in an attempt to break down the thick mucoid secretions in children with cystic fibrosis, bronchiectasis and certain other chronic pulmonary conditions. The results have not been very outstanding and the potential antigenicity of

the enzymes as well as their high degree of irritation to the delicate mucous membranes of the respiratory tract have caused them to lose a great deal of their popularity. It should be mentioned that at least one enzyme, trypsin, when administered in aerosol form was shown to be capable of causing a dyskeratosis and metaplasia of the bronchial epithelium which persisted for up to six months.<sup>6</sup>

Virtually every bronchodilator has been tried as an aerosol at one time or another. But the ones in most common use in children at present are epinephrine and isoproterenol, either alone or in conjunction with drugs such as antihistamines or wetting agents. There is little question as to the effect of these agents when given in this form but the dosage is extremely difficult to control. This is more a problem with epinephrine than isoproterenol due to its greater systemic effect. Both drugs are irritative, however, to the respiratory epithelium and often cause the child to cough, thus allowing him to swallow the drug with a resultant likelihood of increased systemic effect. When used in selected cases, however, and under controlled conditions, epinephrine or isoproterenol in aerosol form may be a useful adjunct to the treatment of severe asthma in children.

There is little indication today for the use of nebulized antibiotics. The difficulties with dosage and increased risk of sensitization as well as the better forms of administration have made this form of antibiotic therapy a method of the past. It may be worth noting, however, that the use of kanamycin in aerosol form has been reported to have definite advantages in the treatment of selected cases of infantile pulmonary tuberculosis. Further reports will be awaited with interest. The risk and types of reactions to aerosols in infants and children have been reviewed recently.<sup>12</sup>

*Mucolytic and Wetting Agents:* In the last few years, acetyl cysteine has been shown to be a very valuable agent in decreasing the viscosity of tracheobronchial secretions. This is apparently due to the fact that acetyl cysteine tends to break the disulfide bonds of protein and actually liquifies the thick proteinaceous material of these secretions. Routine use, however, in respiratory problems of childhood is to be con-



demned. This agent is an extremely irritating substance and is appreciably destroyed by oxygen. It may also interfere with antibiotics that are administered in aerosol form. Wetting agents such as tyloxapol (Alevaire) have not to my knowledge been shown to have any beneficial effect over humidification alone. The use of propylene glycol in cystic fibrosis is predicated upon the assumption that it stabilizes particle size and retards evaporation. If this is correct, then one would expect an increased amount of water to be available for deposition at the terminal alveoli. However, propylene glycol is hygroscopic in nature and therefore tends to attract water during its course through the respiratory tract. This tends to increase particle size allowing less water to reach the terminal alveoli. Whether or not the use of propylene glycol actually represents an advantage over humidification alone in the treatment of cystic fibrosis remains questionable.<sup>8</sup>

*Water Vapor and Humidification:* During the remainder of this discussion, I would like to consider the use of water vapor in clinical pediatrics, both as an aerosol or mist and simply as humidification of inspired air or oxygen. First, it should be recalled that regardless of the temperature or humidity of inspired air, the expired air is at body temperature and fully saturated with water vapor. As this 100 per cent saturated expired air hits the cold environment, its temperature decreases and it therefore becomes supersaturated. The fog seen as we expire on a cold day is simply the conversion of highly humid expired air into an aerosol or mist.

It has been calculated that the adult loses about 250 ml of water vapor per day, simply by saturating his inspired air. I know of no good figures for infants or children, but it seems reasonable to suppose that they also lose a good deal of water in this manner. If we remember that the small neonate is in a somewhat precarious state with respect to water balance, and further, that the amount of water he loses through the normal process of respiration may actually be greater than for the adult on a weight or surface area basis, the amount of water lost in this manner may actually be a significant percent-

age of the infant's total body water. If we go further and superimpose on the normal neonate, a respiratory problem with resultant tachypnea, the loss of water may be increased to the point where the infant may be at risk of dehydration. Further, since it is common practice to treat respiratory problems of infancy and childhood with oxygen, one must remember that oxygen is a very potent drying agent and it thus is reasonable to insist that oxygen always be humidified when it is administered to the small neonate in respiratory distress. It would also seem to be advisable to humidify inspired air for the infant or young child in respiratory distress. This humidification, however, should not be excessive. In a series of very elegant studies, Silverman at Columbia University, determined that the optimal humidity in inspired air administered to the newborn or young neonate is probably in the area of 50 to 60 per cent.<sup>9, 10, 11</sup> At lower concentrations, infants may lose water and actually may undergo desiccation of the delicate respiratory epithelium. This desiccation, of course, interferes with ciliary action and causes edema in the tracheobronchial tree. Both these effects tend to compromise respiratory function further. However, if the humidification of inspired air is too high, water droplets tend to coalesce on the sides of the isolette or incubator. This tends to promote the growth of harmful water bacteria such as *Pseudomonas* and *Aerobacter* and also tends to increase the risk of aspiration of a water bolus. I am sure many pediatricians have had the experience of walking into a nursery and having to wipe the inside of an isolette with a turkish towel in order to verify that an infant was inside. Thus, in addition to these problems of high humidification in the inspired air, it tends to interfere with visual observation of a small neonate who is the one most deserving of intensive nursing

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care. In this modern age of science, a new problem has arisen with the development of the ultrasonic nebulizers. Many pediatricians are not actually aware of the tremendous amount of water that one of these machines can actually nebulize. Machines on the market often nebulize two or three times the total body water of an infant in a 24-hour period. Thus, it becomes possible to throw an infant into water intoxication with the use of an ultrasonic nebulizer. For these reasons, mist therapy in the very young infant or newborn seems to offer no real advantage and may be harmful.

In the older child, especially one with chronic lung disease such as bronchiectasis or cystic fibrosis, the question of humidity or mist therapy can again be considered. As we increase the water concentration of inspired air, we decrease both density and viscosity and it would seem reasonable to use humidification in the treatment of these disorders where thick viscous secretions are often a major problem. The evidence indicates that one can decrease the viscosity of these secretions with humidification or mist therapy, but there is no satisfactory evidence that one gets a better effect with mist therapy than with humidification alone. Again, when we turn to the more acute problems of children such as croup or bronchiolitis, the use of water vapor in inspired air with its resultant decrease in viscosity and density has proven beneficial. But again, the advantages of mist over humidification alone remain to be proven.

#### SUMMARY

Almost any drug can be used in aerosol form but this method of administration is

expensive and cumbersome. It further appears only rarely to be justified in the usual pediatric problems. Humidification of the inspired air is unquestionably beneficial in many respiratory problems of infancy and childhood but the use of a supersaturated solution of water vapor in the inspired air has not been shown to be more beneficial than humidification alone in most cases of respiratory disease. In any individual case, the hazards of aerosol therapy must be weighed against the benefit expected from its use. □

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## ABSTRACTS

### ARCUS NOT SO SENILIS

These authors conducted an interesting survey study of the population of Negroes and whites to quantify the prevalence of corneal arcus and its association with arteriosclerosis, hypercholesterolemia, coronary artery disease, and elevated fasting blood sugar. Virchow felt that arcus was due to arteriosclerosis. Histochemical and biochemical studies of corneal deposits have revealed cholesterol, phospholipid and triglyceride content.

The populations studied included patients on the medical and surgical wards at Johns Hopkins Hospital (all new patients admitted over a six-week period) and male workers at the Bethlehem Steel Corporation (to provide a group free of serious disease and more economically homogeneous).

Arcus was shown to be related to age and race—none was found in whites prior to 50 years, while in the Negroes, 24 per cent of the men and 12 per cent of the women under 40 had an arcus. There was no correlation of arcus with diastolic hypertension, myocardial infarction, ischemic EKG changes, or fasting blood sugar levels. (The frequency of infarction was higher in those older than 40, but this incidence was generally lower in patients with arcus.)

Others have remarked on the early development of arcus in the Negro. Negroes of Africa and Haiti, the Bantu, and the Aleuts have shown arcus in the presence of low cholesterol and low incidence of coronary artery disease.

The postulated relationship between arcus and arteriosclerosis has probably resulted from confusion over two unrelated phenomena appearing more commonly in the older age groups. Recently a high incidence of arcus has been noted in persons exposed to atomic bombs. Some authors have postulated a genetic basis; others, a dietary defect of Vitamin C.

**Reviewer's Note:** This is a well-written, well-planned clinical study designed to shed more light on a physical finding for which we have no explanation and which has often been glibly attributed to "early arteriosclerosis."—*Carman E. Bloedow, M.D.*

Arcus Not So Senilis. Macaraeg, Jr., Placido V., La-sagna, Louis, and Snyder, Bruce. *Annals of Int. Med.*, 68(2): 345-354, 1968.

### RADICAL NECK DISSECTION

This article reviews the experience with radical neck dissection at the University of Oklahoma Medical Center from 1948 to 1965 with 426 patients undergoing 506 radical neck dissections.

Primary lesions were located in the following areas: Oral cavity 27 per cent, lower lip 12 per cent, laryngopharyngeal 29 per cent, skin 18 per cent, salivary glands 4.4 per cent, thyroid 3.3 per cent, unknown primary 2.9 per cent, and miscellaneous 2.8 per cent. Fifty-one per cent had palpable cervical adenopathy prior to surgery and of these 60 per cent had actual

tumor involvement of nodes. There was 36 per cent tumor involvement among those without palpable adenopathy.

The five-year survival for the group was 38 per cent. Postoperative fistulae occurred in nine per cent and 80 per cent of these followed hemiglossectomy, hemimandibulectomy, or laryngectomy done in continuity with radical neck dissection. There was an 8.9 per cent association of second primary neoplasm; of those with laryngeal lesions 5.3 per cent had coexistent bronchogenic carcinoma. Patients with squamous cell lesions had an incidence of an additional primary neoplasm of 12 per cent. The incidence of wound infections was 7.1 per cent. Operative mortality for the group was 2.7 per cent.

Based on their experience, the authors make the following recommendations: 1. radical neck dissection is indicated when there is evidence of local or regional extension of a primary lesion of the head and neck, 2. prophylactic dissection is of value in lesions known to metastasize early (malignant melanoma and carcinoma of the larynx, tongue, and alveolar ridge), 3. it is important to resect the primary lesion effectively.

**Reviewer's Note:** This is an interesting survey of a large group of tumor types with an attempt to assess the postoperative complications and associated disease, the survival rate with the expected survival rate for the same age group.—*Carman E. Bloedow, M.D.*

Experience With Radical Neck Dissection in the Management of 426 Patients With Malignant Tumors of the Head and Neck. Robert T. Nichols, M.D. and Lazar J. Greenfield, M.D. *Annals of Surgery* 167(1): 23-34, 1968.

### RECENT PUBLICATIONS

The *Journal* welcomes the opportunity to list current publications by any Oklahoma physician.

CNS Influence On Plasma Levels of Factor VIII Activity. C. G. Gunn and J. W. Hampton. *Amer. J. Physiol.*, 212: 124, 1967.

The Anticoagulant Effect of Hemophilic Blood; Prolongation of Clotting in a Canine Transmitter. J. D. Bairrington, J. W. Hampton, and R. M. Bird, *Bulletin of USAF School of Aerospace Medical Division (AFSC)*, March, 1967.

Hypercoagulability with Malignancy. L. Waterbury and J. W. Hampton, *Angiology*, 18: 197, 1967.

Hemophilia in the Vizsla. R. G. Buckner, J. W. Hampton, R. M. Bird, and W. E. Brock, *J. Small Anim. Pract.*, 8: 511, 1967.

Fibrin Stabilizing Factor (Factor XIII). S. Y. Alami, J. W. Hampton, G. J. Race, and R. J. Speer, *American J. of Medicine*, editorial, 44: 1, 1968.

Recovery of Respiratory Function and Lung Mechanics Following Experimental Pulmonary Embolectomy. L. J. Greenfield, H. J. Pearce, and R. T. Nichols, *J. of Thor. & Cardiovasc. Surg.*, 55(2): 160-168, 1968.



# Books As Clinical Tools

## CLINICAL REFERENCES ON RHEUMATIC FEVER

ALEXANDER W. PIERCE, JR.\*

The diagnostic criteria for acute rheumatic fever originally proposed by T. Duckett Jones in 1944<sup>1</sup> have proved to be very useful not only in the prevention of over-diagnosis, the purpose for which they were originally proposed, but also as guidelines for clinical investigation of the natural history of the disease, its prognosis, and its treatment. The efforts of a number of individuals to keep these diagnostic criteria abreast of current concepts are a testimonial to their value. A study of the Jones Criteria (Modified)<sup>2</sup> and the Jones Criteria (Revised)<sup>3</sup> is most useful to the physician interested in appreciating the evolution of current concepts in the diagnosis of acute rheumatic fever.

Few areas in clinical medicine have evoked more emotional controversy than that associated with the therapy of acute rheumatic fever. These were placed in brilliant perspective in the excellent review by Feinstein in 1961.<sup>4</sup> Since that time the ten year report of the United Kingdom and United States Cooperative Clinical Trial<sup>5</sup> has appeared and another comparative study of salicylate and steroid therapy has been published by the Combined Rheumatic Fever Study Group.<sup>6</sup>

Ancillary therapeutic measures such as activity restriction and diet continue to receive over-emphasis in standard texts. The role of bed rest in the management of pediatric patients is reviewed concisely in the commentary by Illingsworth in *Clinical Pediatrics* in 1963.<sup>7</sup>

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One of a series sponsored by the Department of Continuing Education, University of Oklahoma Medical Center.

Textbook discussions generally over-simplify for the sake of brevity. A most notable exception to this generalization is the superb review of both rheumatic fever and rheumatic heart disease by Lendrum in Gasul's *Pediatric Cardiology* text.<sup>8</sup> Well written and superbly referenced, this chapter places current concepts of rheumatic fever, its pathogenesis, management, and natural history in clear perspective. Although concisely written, the dissertation exceeds 100 pages in length and has a 323 entry bibliography.

The monograph on rheumatic fever by Markowitz and Cuttner,<sup>9</sup> the second volume in the new and excellent series on *Major Problems in Clinical Pediatrics*, is equally outstanding. The biology, treatment, and prevention of streptococcal infections and the pathogenesis and treatment of acute rheumatic fever are amply reviewed. While the discussion on therapy of severe carditis has been criticized<sup>10</sup> this reviewer can find little with which to take issue. The study of Czoniczer, *et al.*,<sup>11</sup> will interest those who pursue this aspect in more depth. □

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## ANNUAL MEETING A SUCCESS

A total of 813 physicians registered and participated in the 62nd Annual Meeting of the OSMA held in the Skirvin Hotel in downtown Oklahoma City, May 16th-18th. An additional 627 other guests including physicians' wives, exhibit personnel, and special guests brought the total attendance to 1,440.

According to Program Chairman, Richard B. Price, M.D., the meeting was a success by all standards. He pointed out that all exhibit spaces were filled, the scientific sessions were well attended and the social functions were outstanding.

### Business

The OSMA House of Delegates met Friday and Saturday, May 17th and 18th, to consider the six Council reports, the Treasurer's report, the President's report, the Board of Trustees' report, special resolutions and to conduct election of new officers.

Hillard E. Denyer, M.D., Bartlesville, was named President-Elect of the association and will become its 64th President when he takes office in May, 1969.

Edward K. Norfleet, M.D., Tulsa

psychiatrist, was elected Vice-President to serve with President Scott Hendren, M.D., during the coming year.

The association's Secretary-Treasurer for the coming year will be Stanley R. McCampbell, M.D., an Oklahoma City specialist in cardiology.

In other association elections, C. M. Hodgson, M.D., and Roger Reid, M.D., were re-elected Speaker and Vice-Speaker of the House of Delegates, respectively. Francis A. Davis, M.D., and Harlan Thomas, M.D., were re-elected to their positions as AMA Delegates. Rex E. Kenyon, M.D., was re-elected as an alternate AMA Delegate, while Orange Welborn, M.D., was elected to replace Ennis Gullatt, M.D., who resigned.

The entire proceedings of the OSMA House of Delegates are printed on pages 287 to 339 in this issue of the Journal.

### Scientific

Forty-four medical experts from around the United States presented various portions of the scientific program in the 12 specialty section meetings.

Two special educational programs drew large physician audiences on Thursday afternoon, May 16th, and Saturday afternoon, May 18th.

The Thursday afternoon program was the "Government Fee Conference." The conference began with a talk by Thomas G. Bell, Ph.D., of the Social Security Administration's Medicare office in Baltimore, Maryland. He spoke on the subject "Governmental Attitudes Toward Medical Charges."

This talk was followed by Scott Hendren, M.D., speaking on the subject "Medical Attitudes Toward Governmental Health Programs." The remainder of the program was taken up by an explanation of the philosophies and mechanisms for determining usual, customary and reasonable fees by the three largest governmental medical programs . . . Medicare, Medicaid and CHAMPUS.

An extra feature of this year's Annual Meeting was the "Forum on Medicine and Government" held Saturday afternoon, May 18th. It was designed to familiarize physicians with the operations of state government and the legislature. Persons attending this meeting heard an explanation of the Attorney Gen-



AMA Vice-Speaker of the House of Delegates, Doctor Russell Roth of Erie, Pennsylvania, addresses the OSMA House of Delegates meeting, Saturday morning, May 18th.



eral's office, the State Finance office, the Oklahoma Court system, the State Senate, the House of Representatives and the Legislative Council.

#### Exhibits

For the first time in many years, all exhibit spaces at the Annual Meeting were filled. A total of 86 technical, institutional and scientific exhibits were offered for physician-viewing. Three popular exhibits featured a travel trailer, automobile and boat.

Seventy different companies paid for the privilege of exhibiting to the physicians in attendance. The money received from these companies will be used to offset much of the cost of the OSMA's Annual Meeting.

#### Social

The three main social events of the Annual Meeting—the free Champagne Hour, the Gaslight Party and the President's Inaugural Dinner-Dance—could be described as resounding successes.

Over 400 physicians and their wives attended the Champagne Party in the hotel's Persian Room. The party was sponsored jointly by the C. L. Frates and Wilson and Wilson insurance agencies.

Friday night's Gaslight Party, featuring the guys and gals from Chicago's famous Gaslight Club, was attended by over 350 physicians and their wives. During the evening, several physicians were taught the latest dances by the beautiful Gaslight Girls.

The annual President's Dinner-Dance, held Saturday evening in the hotel's Persian Room, attracted over 250 persons. The highlight of the evening was the installation of Scott Hendren, M.D., as President of the OSMA for the coming year. After the formal banquet, Al Good and his orchestra played for the annual dance.

Next year's annual meeting will be held May 15th-17th in the Mayo Hotel and the Assembly Center, Tulsa. OSMA's Annual Meeting Committee met on June 3rd to develop preliminary plans. □

## Physicians and Lawyers to Confer at Fountainhead

Members of the OSMA and the Oklahoma Bar Association will jointly participate in a Medical-Legal Institute on July 11th-13th at Fountainhead State Lodge.

The purpose of the meeting is to close the gap of understanding between the two great professions and to thereby improve interprofessional relations. Planned by a joint committee of doctors and lawyers, the program is patterned after a very successful meeting conducted in 1966 by the bar association and the Oklahoma County Medical Society.

All members of the two state associations will receive programs and letters of invitation in June. Registration fee for the institute is \$25.00, and early registrations are encouraged.

#### Program Outlined

Designed to provide a perfect blend of educational topics and leisure time at the beautiful lodge, the program begins on Thursday at 4:00 p.m. with welcoming addresses by the presidents of the two state associations, followed by a lecture on "Informed Consent" presented by Raoul Magana, LL.B., Los Angeles.

A social hour will conclude Thursday's programming.

Topics for Friday include: A discussion on the OSMA-OBA Interprofessional Code; problem-area presentations involving medical reports, medical testimony, discovery and privilege, and payment for medical-legal services; an exchange on the "Conspiracy of Silence" alleged to exist in the medical community; and an explanation of the method employed by physicians and attorneys in Colorado to screen malpractice claims, presented by James Carrigan, LL.B., Denver.

Saturday's program features: A doctor-to-lawyer presentation entitled "Limitations on Diagnostic Aids"; a discussion on Oklahoma's Professional Corporation Act and recent court decisions involving the

recalcitrance of the Internal Revenue Service; and, finally, a lawyer-to-doctor "check-up" on the proper handling of personal legal affairs.

#### Recreation Opportunities

By starting the Institute late Thursday afternoon and by providing for early-afternoon adjournments on Friday and Saturday, the program planners have afforded doctors and lawyers and their families with ample time to enjoy the swimming, boating, fishing, golf, and horseback riding facilities of the state park.

Twelve attorneys and ten physicians will participate in the institute program.

Heading the OSMA Medical-Legal Relations Committee is Barton Carl, M.D., Oklahoma City. His counterpart from the Oklahoma Bar Association is George Short, LL.B., Oklahoma City. □

## Fourteen Participate in Annual Golf Tourney

Doctor Lawrence Silvey, Bethany, edged out Doctor George Brown, McAlester, for low gross honors by shooting a 73 in the annual OSMA Golf Tournament. Fourteen M.D.'s from around the state and one out-of-state guest played for low gross and handicap trophies at Lincoln Park Golf Course. The winner of the annual event, held in conjunction with the OSMA Convention, was awarded the OSMA Traveling Trophy and a permanent trophy attesting to his golfing ability.

Robert Ellis, M.D., tournament chairman, explained the scoring method allowed for a low gross champion and a handicap champion. Doctor John Ingle, Oklahoma City, won handicap honors over Doctor Harold Tisdal with a low net score of 64.

Appropriate awards were presented to winners and runners-up and a special award went to Doctor John Rollow, a guest from Bentonville, Arkansas, who shot a low gross score of 72. □



## Advisory Council Named For Health Planning

Governor Bartlett has announced the appointment of 40 Oklahomans to serve on the Health Planning Advisory Council to guide comprehensive health planning in the state.

The planning function, to be directed by the Oklahoma Health Planning Agency and financed primarily by Federal funds, encompasses physical, mental and environmental health problems; it involves the facilities, services and manpower required to meet identifiable health needs; and has the ultimate mission of influencing public, voluntary and private resources to conform to various programs designed to improve health conditions in the state.

Director of the planning agency is Jack V. Boyd, formerly associated with the State Department of Health.

No definite health planning has come from the program to date, but organizational efforts include the following:

- The State Health Planning Agency has been organized under the State Division of the Budget.

- In addition to the Advisory Council, an Interdepartmental Committee advisory group has been formed. It is comprised of the Governor, as chairman; the Commissioner of Health; the Director of Public Welfare; the Director of Vocational Rehabilitation; the Director of Mental Health; the Dean of the medical school; the Director of the War Veterans Commission; the Budget Director; and the Director of the Division of Research and Planning of the State Industrial Development and Park Department.

- Eleven state planning areas have been determined and Federal health planning grants for several of these regions are in process.

- A three-session seminar on "Orientation to Comprehensive Health Planning" has been carried out.

### Advisory Council Personnel

The Federal law requires that the majority of members of the council must be "consumers" of health services rather than providers of such services.

The OSMA Board of Trustees nominated a slate of physicians nearly a year ago as candidates for service on the council, but only one of the OSMA nominees received a gubernatorial appointment. (However, six other physicians were appointed as may be seen below.)

The advisory council is comprised of the following: Ralph Bethel, president, Blue Cross-Blue Shield, Tulsa; Letha M. Billings, registered nurse, Woodward Memorial Hospital, Woodward; Orville Bratcher, Continental Oil Co., Ponca City; Doctor Walter Brown, Tulsa; W. J. Burcham, Armco Steel Co., Sand Springs; James F. Burnham, community action program director, Watonga; Rep. Barbour Cox, Chandler; Doctor Ross Deputy, Clinton; Doctor Hayden Donahue, administrator, Central State Griffin Memorial Hospital, Norman; W. D. Finney, Fort Cobb; Mayor Wayne Gilley, Lawton; James D. Harvey, administrator, Hillcrest Hospital, Tulsa; Doctor Scott Hendren, Oklahoma City; Mrs. Addie Herbert, Muskogee; Lawrence L. Hoecker, American General Life Insurance Co., Oklahoma City; Mrs. Eileen Howell, Tulsa; Doctor Bertha Levy, State Department of Institutions, Social and Rehabilitative Services.

Oklahoma City; James K. Lindsey, Tahlequah; W. D. Little, publisher, Ada; Frank Lynch, Oklahoma county commissioner, Oklahoma City; Mrs. Joy Mackie, Wann; Darrell A. McNutt, Soper; L. T. Moss, Northeast Oklahoma Electric Cooperative, Vinita; Sudie Shaw Musgrove, Tulsa; Ralph Neely, Oklahoma City; T. O. Parsons, Communications Workers of America, Oklahoma City; Doctor Lloyd E. Pummill, State Department of Health, Oklahoma City; Doctor Guy V. Rice, medical director, Cleveland-McClain County Health Department, Norman; Walter P. Scheffe, Enid; Doctor William W. Schottstaedt, school of public health, University of Oklahoma School of Medicine, Oklahoma City; Jearl Smart, Wewoka; Mrs. J. B. Smith, Pawhuska; Grace L. Spivey, Stillwater; Doctor George R. Thomas, Oklahoma City; and Doctor Francis Tuttle, state director, Vocational-Technical Education, Stillwater.

### Get Involved

OSMA President Scott Hendren, M.D., is encouraging all state physicians to become involved in the regional planning programs "because we cannot afford to have important health directions charted without professional guidance.

"We have a genuine interest in improving further the health conditions in our state," he said, "and I'm sure the OSMA will cooperate fully in carrying out practical mechanisms which may emanate from the planning process."

The medical leader pointed out that the Federal law carries a specific prohibition against interference with existing patterns in the private practice of medicine, dentistry and related healing arts.

## TULSA NEIGHBORHOOD HEALTH CENTER PHYSICIANS NEEDED

The Tulsa City-County Health Department and Tulsa County Medical Society's Neighborhood Health Center soon to be opened in North Tulsa offers exciting opportunities in a group practice setting for providing high quality personalized family care.

Positions available now for: FAMILY PHYSICIANS — INTERNISTS — PEDIATRICIANS — OB.-GYN. — OTHERS. Salaries competitive — Opportunities for continuing education — Liberal vacation, insurance, and retirement programs.

Apply, submitting training and experience to: George W. Prothro, M.D., Director, Tulsa City-County Health Department, 4616 East Fifteenth Street, Tulsa, Oklahoma 74112.



“Despite this provision, however, we must actively contribute in the development of meaningful and workable plans—because any program development in the health field will at least indirectly affect the professions providing health services.” □

## Income and Utilization Problems Force Medicaid Cut

The Department of Public Welfare announced on May 28th that it would be necessary to cut \$12 million during the next fiscal year from the health benefits afforded to public assistance recipients and other indigent persons.

During the fiscal year ending May 31st, the total Medicaid program cost about \$72 million, an approximate 16 per cent growth over the previous year. In addition, the amount of state funds available to operate the program has diminished, thus bringing about the combination problem necessitating the economy steps.

### OSMA Consulted

The Governmental Relations Committee of the Oklahoma State Medical Association met on May 26th with DPW officials to consider the financial problem as it would affect physician coverage.

It was explained that the total program must be reduced to \$60 million a year, and that about \$5 million in physicians' services would have to be eliminated. Hospitals are also faced with a proportionate reduction, and nursing homes are being held to last year's reimbursement formula plus a rigid control over eligibility of nursing home beneficiaries.

The OSMA committee, in keeping with the established policy of the House of Delegates, recommended that compensable services be reduced rather than cutting the value of physicians' services.

### Restrictions Approved

Effective June 1st, 1968, the Public Welfare Commission approved the following new policies governing medical and hospital services:

#### 1. Hospitals:

- a. Payment for hospital care will

normally be limited to ten days per admission. No extension will be granted for adults, and no payment will be made if an adult patient is readmitted within 20 days of discharge.

- b. A ten-day extension may be granted for persons under 21 years old, upon approval of the DPW Medical Review Team on Form CC-MA-1. This form must be submitted within two days from the end of the ten-day period.

#### 2. Physicians:

- a. Payment to physicians for medical services is limited to one hospital visit per day, with a maximum of ten days in-patient care per admission.

- b. Payment to physicians is limited to two visits per month in a nursing home.

- c. Payment to physicians is limited to four office visits or four home visits per month, or combination thereof, regardless of the number of physicians involved.

- d. Payment to surgeons will include pre and post-operative care in the surgical fee.

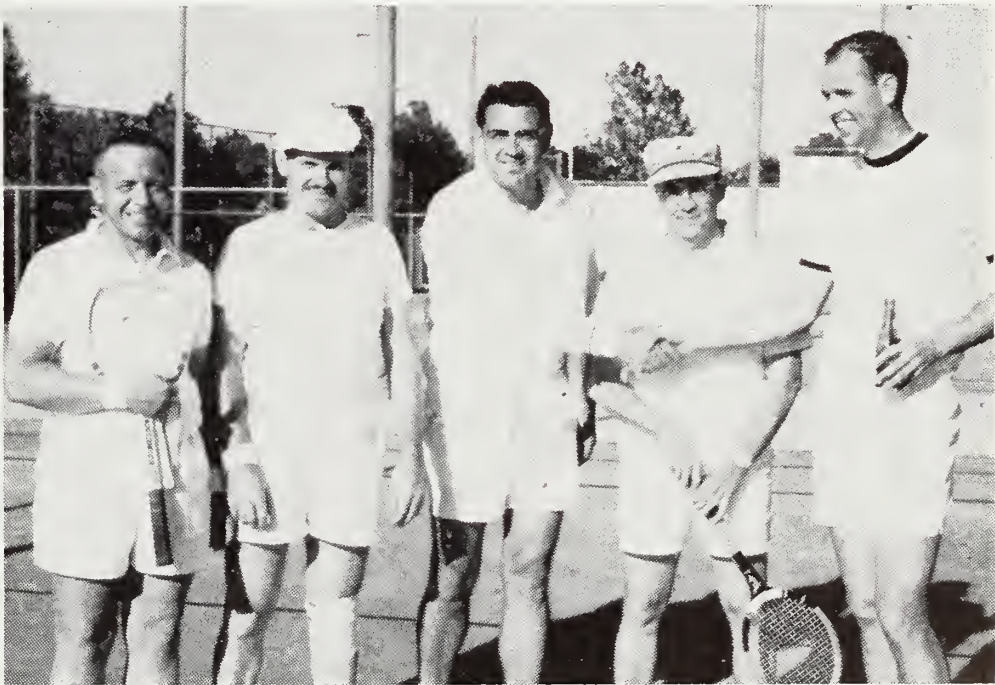
- e. Payment to assistant surgeons will be discontinued.

- f. In the event a patient has already been hospitalized, and the need for surgery arises, payment from time of referral will be limited to the physician to whom the patient is referred, unless supplemental medical skills are required and approved by the DPW Medical Review Team.

The cutbacks in benefits offered are expected to stabilize the program within available funds. All “vendors” of health services are frozen at their former percentage levels of participation, with physicians receiving about 20 per cent of the total available budget.

Services not covered by the Department of Public Welfare become a direct responsibility between the patient and the attending physician. □

## Tennis Draws Record Attendance



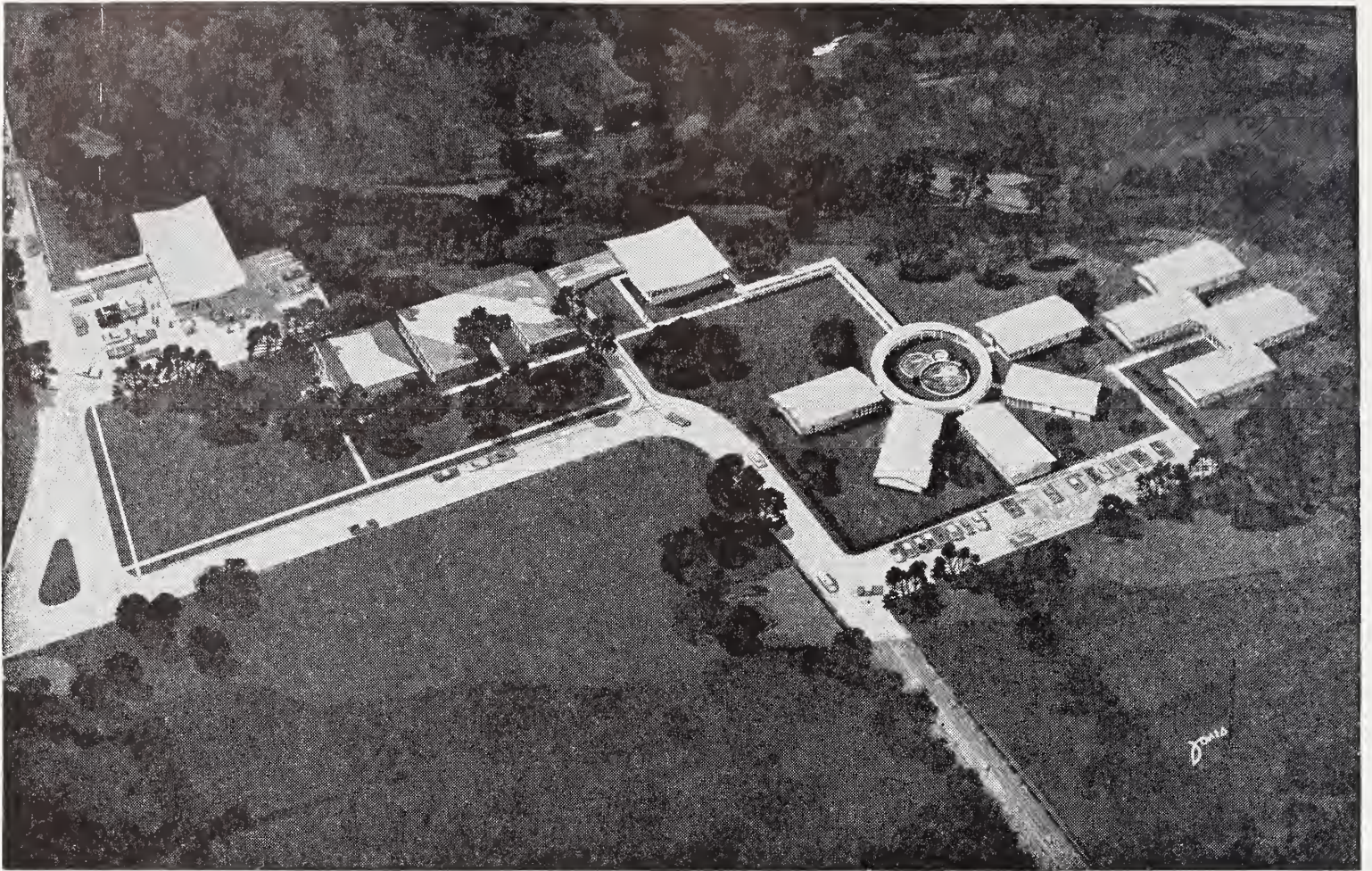
Doctor Stanley McCampbell, Chairman, OSMA Annual Tennis Tournament Committee, reported record attendance for the 1968 Tennis Tournament played at Memorial Park. The annual event had fourteen doctors competing for singles and doubles titles.

Doctor Lanny Anderson, Oklahoma City, defeated Doctor McCampbell, Oklahoma City, in the singles finals (6-4, 6-3) and then teamed with Doctor Harry Singleton, Oklahoma City, to defeat Doctors Farris Coggins and George Jennings for the doubles title (6-3, 6-4).

Doctor McCampbell said participation was encouraging. Next year's tournament in Tulsa will be headed by Hugh Perry, M.D.

Pictured (left to right) are Doctors Jennings, Coggins, McCampbell, Singleton and Anderson. □





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# Proceedings of the 62nd Annual Session of the House of Delegates of the Oklahoma State Medical Association

## OPENING SESSION

### CALL TO ORDER:

The House of Delegates convened its 62nd Annual Session at 8:45 a.m. in the Skirvin Hotel's Convention Center, Oklahoma City, Oklahoma. C. M. Hodgson, M.D., Speaker of the House, presiding.

### INVOCATION:

G. W. Tracy, M.D., Muskogee, delivered the invocation.

C. Riley Strong, M.D., Chairman of the Credentials Committee, reported a quorum present.

### COMMITTEE APPOINTMENTS:

Doctor Hodgson announced that the following appointments have been made:

#### *Credentials Committee*

C. Riley Strong, M.D., El Reno, Chairman  
Elwood Herndon, M.D., Oklahoma City

John A. McIntyre, M.D., Enid

#### *Sergeants at Arms*

Duane E. Brothers, M.D., Tulsa, Chairman

R. A. Conley, M.D., Watonga

R. G. Johnson, M.D., Frederick

#### *Tellers*

Harold Stout, M.D., Waurika, Chairman

Harold T. Baugh, M.D., Meeker

R. W. Morton, M.D., Sulphur

#### *Parliamentarian*

Roger Reid, M.D., Ardmore, Vice-Speaker of the House

#### *Reference Committee No. I*

Myra A. Peters, M.D., Tulsa, Chairman

Maurice C. Gephardt, M.D., Muskogee

Robert S. Ellis, M.D., Oklahoma City

Allen E. Greer, M.D., Oklahoma City

Richard H. Burgtorf, M.D., Shattuck

John R. Reid, M.D., Nowata

Recording Secretary: Don Blair

#### *Reference Committee No. II*

Marvin K. Margo, M.D., Oklahoma City, Chairman

C. S. Lewis, M.D., Tulsa

Thomas W. Taylor, M.D., Tulsa

James F. Tagge, M.D., Enid

Thomas E. Rhea, M.D., Idabel  
Jack W. Parrish, M.D., Seminole  
Recording Secretary: Ed Kelsay

#### *Reference Committee No. III*

Richard W. Loy, M.D., Pawhuska, Chairman

Ray V. McIntyre, M.D., Kingfisher

Robert A. Northrup, M.D., Tulsa

John W. Drake, M.D., Oklahoma City

Jess D. Green, Jr., M.D., Bartlesville

Malcolm Mollison, M.D., Altus

Recording Secretary: Dixie Griffith

#### *Reference Committee No. IV*

Jack P. Myers, M.D., Okmulgee, Chairman

Emil E. Palik, M.D., Tulsa

R. B. Carl, M.D., Oklahoma City

E. L. Buford, M.D., Guymon

James L. Haddock, M.D., Norman

Cecil R. Stansberry, M.D., Oklahoma City

Recording Secretary: Martina Doyle

### INTRODUCTION OF GUESTS:

The following guests were introduced and brought greetings to the House of Delegates:

Mrs. George H. Miller, Tulsa, Retiring President, Woman's Auxiliary to the Oklahoma State Medical Association.

Mrs. Alfred T. Baker, Durant, Incoming President of the Woman's Auxiliary to the Oklahoma State Medical Association.

Mrs. R. C. L. Robertson, Houston, Texas, Southern Regional Vice-President of the Woman's Auxiliary to the American Medical Association.

Mrs. Virgil Ray Forester, Oklahoma City, President-Elect of the Woman's Auxiliary to the Southern Medical Association.

Malcom E. Phelps, M.D., El Reno, Vice-President of the American Medical Association. Doctor Phelps commented that while he had accepted a position with the Department of State's Agency for International Development and is temporarily residing in Washington, D.C., he still wishes to be consid-

ered an "Oklahoman." Also, he informed the House that the Shepherd Foundation has made \$80,000 available for loans to the students of Oklahoma; and he commended Doctor Maxwell A. Johnson for his leadership during the past organizational year and extended his congratulations to Doctor Scott Hendren, President-Elect of the Oklahoma State Medical Association.

Joe G. Fagan, Oklahoma City, President, O.U. Chapter of the Student American Medical Association. Mr. Fagan reported on the activities of the Student AMA and solicited OSMA support in providing summer employment to medical students through physicians' offices and clinics.

Doctor James L. Dennis, Dean of the O.U. School of Medicine, was introduced by OSMA President Maxwell A. Johnson, who presented him with an American Medical Association Education and Research Foundation check in the amount of \$9,722.84. After expressing appreciation to the AMA for its contribution, he observed that the Medical Center's development plan was going according to schedule. Regarding the new dentistry school, he pointed out that President Cross has appointed a planning committee to select a dean, develop a curriculum, etc. Dean Dennis commended Project Responsibility on its activities; also, the town of Wakita for constructing a medical facility for the community without financial assistance from the government.

Richard B. Price, M.D., Oklahoma City, Chairman of the Annual Meeting Program Committee.

Mr. A. M. "Moco" Edwards, Chicago, Illinois, AMA Field Service Division.

Mr. William J. Monaghan, Chicago, Illinois, AMA Department of Investigation.

(Continued on Page 292)



## DOCTOR, WHAT WILL YOU EARN?

It depends, of course, on your age and annual earnings, but the amount can quite reasonably exceed \$400,000.

The total value of all your possessions—property, savings, cars and personal belongings—is only a fraction of what you will probably earn during years of practice. And yet some of you have insured these things and left your earning power unprotected.

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## A Small Town Doctor . . .

(Continued from Page 251)

—and the doctors (who are subsidized by the government) have a monthly salary of ten thousand piosters—about \$85.00 a month. The average semi-skilled worker makes three thousand piosters a month, which just about covers living expenses, they tell me.

Dress varies from thongs on the feet and a light pair of cotton pajamas over the body for working people, to fancy high heeled shoes and some of the most beautiful lace dresses imaginable. The latter are worn by wealthy women. Elementary school children dress alike, boys in dark shorts and white short sleeved shirts; the girls in knee length dark skirts worn with a white middy-type blouse. At the junior high and high school level, boys wear long, dark trousers and white shirts while the girls wear a solid white Ao Dai—white slacks over which is worn the long flowing tunic that falls from the neck to the ankles and is split to the hip on each side. From this dress, the girls go on into the colored Ao Dai that can be dazzling against their olive complexions and waist length jet black hair, or into more conventional western dress as we know it, skirt and blouse or tailored suits.

There are rather strong family ties here with each family looking to the eldest for decisions. Three generations always live at home, and if a grandfather dies, the oldest grandson quits his job and comes home to live. No matter if he holds an engineer's position in a metropolitan area, he returns to the rice field and the home when family ties demand his presence.

At Danang, we were surrounded by a great many American and Army of the Republic of Vietnam (called ARVIN) troops. There is a large Air Force group and a very fine air base here. There are also Marines by the thousands, Navy, Army, and the Seabees—whom I shall list as a separate unit although they are a part of one branch of the Armed Forces. Our security was considered excellent, and although

## Pharmacy Students Take Clinical Clerkship



A new program of clinical experience takes University of Oklahoma pharmacy seniors onto the wards at University Hospitals in Oklahoma City to further their knowledge of drug action. William Scott Hendren, Oklahoma City, second from right, son of OSMA President Scott Hendren, M.D., studies a chart with Mrs. Ruth Crutchfield, R.N., on the Coronary Care Unit. Other students are, from left, Paul W. Bagwell, Amarillo, Texas, James F. Neighbors, Oklahoma City, and Robert Sukenik, Chicago. Only one other institution, the Medical College of South Carolina, requires such a clinical clerkship.

we heard reports of many Viet Cong and North Vietnamese army troops in our vicinity, we felt there were enough military forces around to cope with any situation that might arise. Such is not the case for all cities in South Vietnam. We were told in our briefing that everything possible would be done to protect visiting physicians from the United States, and I believe this is true. Of course, we were to conduct ourselves as non-combatants and not to seek out a fight. The war is always close at hand, however, in fact it came down to six kilometers away one night, and we sat on the hospital roof and watched a two and one-half hour fight that used most of our conventional weapons—small arms, rockets, bombs, and artillery, from jet planes, helicopters, naval guns just off the coast, small air craft, and the fabulous "Spooky" gunship which can put a bullet on

### ADMINISTRATIVE OPPORTUNITIES

**Additional physicians** are needed for the Oklahoma State Penitentiary, McAlester, and the Oklahoma State Reformatory, Granite.

**Salaries are open.** A forty-hour week leaves time for limited private practice. Oklahoma license required.

**Contact** Arnold E. Pontesso, Director, Department of Corrections, Plaza Court Building, Oklahoma City, Oklahoma 73103.



every square foot of a football field in one second when all the guns are firing! All of us watching that night decided that we wanted to be no closer to any war than we were at that moment.

We must grudgingly concede something to the Viet Cong guerillas—they fight pretty hard for people with poor pay, poor supply lines, no air support, and rather poor medical care. They have a terror campaign that is brutal but effective. In one short month of the Tet uprising, they neutralized almost two-thirds of all that the United States had done in this country since 1959.

We are going about the job of rebuilding and retaking all that was lost, step by step, but it seems to me that if our military leaders do

not find a better way to fight this most *unconventional* war, it could take a very long time to make the republic secure. It will take more money than our nation will have to spend abroad for the next 50 years. Remember, this is just one man's opinion, but I don't believe it is wrong to say that this opinion is shared by many Americans here. Some way, we *must* gain the right to say what the Vietnamese will do in order to help us win this war in a shorter time. Graft and corruption in the South Vietnamese government channels is not only condoned, it is *expected* and *accepted*! Every man handling supplies takes out his "ten per cent." Is it any wonder that only about 45 per cent of all supplies unloaded at the bases reach the field? How long would America survive as a nation if our losses

continued at such a high level? Rent on buildings or homes furnished for Americans is astronomical, but it is paid by the United States apparently without question: \$17,000 monthly to rent a house in Danang for one man I met, while two nurses were living in an apartment which rents for \$800.00 a month. These are just two examples of what is happening to our tax dollars—yours and mine! I think it is time for us to take a very serious look at ourselves, the "Rich Americans," because pretty soon we may be merely "those Americans." It seems that we may be casting bread on the water with a stone inside the loaf. Communism is a powerful but insidious force which we are committed to fight unrelentingly—whether it be in Southeast Asia, South America, Central America, or here inside our own land; and, the only way we can fight this world problem is to present a unified front from all democratic nations. Somehow, I don't feel that there is a unified front in Vietnam.

My stay in Vietnam has been a very humbling experience which was well worth the time and financial loss involved. I felt rather adequate to handle the job when I left home but now I feel completely inadequate at times. Oh, how I wish I knew more of the specialty fields in order to be of greater service to these people! To men coming here in the future I would suggest a review of basic anatomy; also bring lecture materials (the Vietnamese interns get an hour lecture three days a week from one of the American doctors); likewise bring some specialty equipment if you have any particular instruments you like, and do not be afraid to face a few hardships such as hard beds, flies in the surgical suite, or mosquitoes in your room, because you'll take home something that money can't buy, artists can't paint, and a thief can't steal—the knowledge that just from the goodness of your heart you went out of your way to help your fellow man. After all, isn't that the principal reason the Creator made physicians? —Arthur M. Brown, Jr., M.D. □

## DEATHS

FRANK E. FLACK, M.D.  
1923-1968

A 45-year-old Woodward physician, Frank E. Flack, M.D., died May 4th, 1968. Born in Halstead, Kansas in 1923, Doctor Flack received his medical degree from the University of Kansas School of Medicine in 1946. Following World War II when he served as a Lieutenant Commander in the Navy, he established his practice in Woodward in 1949.

He was a member of the Phi Beta Phi medical fraternity.

D. G. WILLARD, M.D.  
1901-1968

A Norman physician and former Cleveland County Health Superintendent, D. G. Willard, M.D., died in Norman, May 9th, 1968.

Born in Chillicothe, Missouri, in 1901, Doctor Willard received his medical degree from the University of Oklahoma School of Medicine in 1929. In 1930, he established his private practice in Norman and also served as staff physician for the OU football team.

He was a member of the Oklahoma Chapter of the American Academy of General Practice and the Phi Beta Phi medical fraternity.

LUTHER J. SPICKARD, M.D.  
1882-1968

A longtime resident of Okemah, Doctor Luther J. Spickard, died May 19th, 1968.

Doctor Spickard, born in Kentucky, graduated from the University of Louisville Medical School in 1908 and began his medical practice in Okemah in 1922.

In 1959, the OSMA presented him with a 50-year pin for his years of medical service. He retired from active practice in 1967.



## Miscellaneous Advertisements

**WANTED**—Internist, board certified or board eligible for full-time assignment to medical service; 390-bed general medical and surgical Hospital; beginning salary \$21,469 to \$23,921 PA depending upon qualifications; approximately 20 per cent additional fringe benefits including annual and sick leave; insurance and retirement plan. Nondiscrimination in employment. Location in a superlative outdoor recreation area. Contact Chief of Staff, Veterans Administration Hospital, Honor Heights Drive, Muskogee, Oklahoma 74401.

**PRACTICE FOR SALE.** Office set up for Ophthalmology alone or Eye, Ear, Nose and Throat. In new medical building, one block from new 394-bed Baptist Hospital, which is going to double soon, in suburban Oklahoma City. Practice established since 1952, with 22,000 records in ophthalmology since 1958 and 10,000 ear, nose and throat records. Approximately another 12,000 to 14,000 eye, ear, nose and throat records in my possession from 1952 to 1958. Gross \$60,000 to \$65,000 and could be more with more effort. Contact Key C, The Journal, Oklahoma State Medical Association, P.O. Box 18696, Oklahoma City, Oklahoma 73118.

**PEDIATRICIAN** wanted to work with emotionally disturbed children and handicapped children in community outpatient and inpatient facility for such chronically handicapped children. Present physician staff of two pediatricians, one pediatric neurologist, two child psychiatrists. Contact James G. Coldwell, M.D., Chief, Pediatrics, Children's Medical Center, P.O. Box 7352, Tulsa, Oklahoma 74105.

**DESIRE LOCUM TENENS** between June 1st, 1968 and September 1st, 1968. 1963 O.U. graduate. Contact Donald P. Ferrell, M.D., Apt. 130, 2730 South Chautauqua, Norman, Oklahoma 73069. Phone 329-5987.

**ASSOCIATES** in Internal Medicine, Urology, ENT, and Orthopedics needed. Excellent practice opportunity in expanding service area. Contact Robert E. Herndon, M.D., The Chickasha Clinic, Inc., Chickasha, Oklahoma.

**UNDIVIDED ONE-HALF INTEREST** in 80 acre farm off I.H. 35 and one mile south of now developing huge new shopping center in Moore. Sacrifice price. Contact William R. Moore, M.D., 5510 South Western, Oklahoma City. ME 2-3395.

**IMMEDIATELY AVAILABLE,** modern office, x-ray facilities and small laboratory, fully stocked and supplied. May be purchased or leased to general practitioner at a nominal fee. Located in North Central Oklahoma. Thirty-bed replacement hospital under construction. Contact Administrator, Hominy City Hospital, Hominy, Oklahoma. Call collect 885-2154.

**WANTED**—general practitioner or internist to join a general surgeon and internist in a well-established clinic with a fully accredited 40-bed hospital. Small prosperous Northwestern Oklahoma town with excellent schools, churches, and recreational facilities. No investment required. Retirement plan, salary open. Write or call R. R. Boone, Jr., M.D., Mooreland, Oklahoma. Office, 405 WY 4-5421, home 405 WY 4-5671.

**GENERAL PRACTICE** for sale or lease. Reasonable terms can be arranged. Office consists of nine rooms, including x-ray and laboratory, in modern building of Frank E. Flack, M.D., deceased May 4th, 1968. Same nurse for ten years. Fast growing town of 10,000 with 100-bed hospital. Twenty to twenty-five patients per day. Mrs. Frank E. Flack, Flack Clinic, 1115 18th Street, Woodward, Oklahoma.

**WANTED: EXPOSED X-RAY FILM FOR SALVAGE.** What have you? Write today! Murray, 3305 Bryan, Dallas, Texas 75204.

**GENERAL PRACTITIONER** wanted for industrial work with large group practice in Tulsa. Must have one year's residency. Contact Key G, The Journal, Oklahoma State Medical Association, P.O. Box 18696, Oklahoma City, Oklahoma 73118.

**MAKE OFFER:** Bird-Mark 7, Medcosonlator and miscellaneous supplies. Contact Dan E. Chesnut, M.D., 125 East Main Street, Wilburton, Oklahoma.

**PHYSICIAN WANTED** for Job Corps Center, Guthrie, Oklahoma. Resident physician needed to care for 400 girls. Attractive salary. Contact Don Crawford, Personnel Director, P.O. Box 978, Guthrie, Oklahoma 73044.

**TULSA, OKLAHOMA.** Lease-purchase fully equipped new office space including excellent x-ray, opposite 450-bed general hospital. \$350 month, four years; then \$200. Available August 1st. M. K. Ledbetter, M.D., 313 Physicians Building, Tulsa.

**GP NEEDED FOR GRANITE.** Equipped clinic and established practice available in nice Southwestern Oklahoma community; trade territory of 2,500; new hospital and professional help ten minutes away; industrial medical opportunity at reformatory available as additional incentive. Contact E. J. Hahn, City Clerk, Granite, Oklahoma.

**WONDERFUL OPPORTUNITY** for General Practitioner at Henryetta Clinic, Henryetta. Excellent starting salary with prospects for early increase. Contact Carlton E. Smith, M.D., or Donald Tutt, M.D., Telephone Area Code 918, OLIVE 2-3337, Henryetta.



## Proceedings . . .

(Continued from Page 287)

Miss Linda Allen, Chicago, Illinois, Research Associate, American Medical Association.

Walter E. Brown, M.D., Tulsa, Chairman of the Professional Advisory Committee on Medical Care for Public Assistance Recipients. Doctor Brown reported that the committee has been in existence for over ten years and is comprised of 20 members representing the medical profession, various paramedical organizations, and the Oklahoma Legislature.

Due to the increased cost of medical care, the Department of Public Welfare has requested recommendations regarding economy measures which could be taken to stay within the present budget; or, in the event the Supreme Court does not set aside the ruling of the Attorney General concerning earmarked funds, a reduced budget. To date, the Department has operated solely on funds derived from sales taxes and if these funds are not available, Oklahoma will be unable to match Federal funds. He stated that a proposal would be made to the Public Welfare Commission to freeze vendors at their present income percentages of the total health care budget; this proposal is supported by the hospital association and the nursing home association.

Since Congressman John Jarman was scheduled to receive an Affiliate Membership, but was unable to attend the meeting, Doctor Hodgson introduced Mrs. Ellen McCue, Mr. Jarman's representative, and read the following telegram:

"Regret sincerely that change in Congressional program is keeping me here in Washington, and prevents my attending House of Delegates to receive Affiliate Membership. As Chairman of Public Health Subcommittee of House Interstate and Foreign Commerce Committee, I want to express appreciation for working relationship with and good counsel from the Oklahoma State Medical

Association. Please extend my warm regards to House of Delegates and let me know of anything I can do to be of service either in Oklahoma or here in the Nation's capitol."

### REMARKS OF THE SPEAKER:

Doctor Hodgson welcomed all members and guests to the 62nd Annual Session and made the following remarks:

"Your committee has spent much time and effort in the preparation of this year's varied program, and it is hoped everyone will take full advantage of the clinical and social opportunities offered.

"On March 9th and 10th, 1968, your Speaker and Vice-Speaker attended a Speakers' Conference which was held in New Orleans. This meeting convened for the first time in the same city in February of 1966. Kansas, Arkansas, Louisiana and Oklahoma were represented. Doctor Milford Rouse, who was then Speaker of the House of Delegates of the American Medical Association, acted as moderator. In 1967 the meeting was again held in New Orleans, but was enlarged to include the Southeastern states. Doctors Walter C. Bornemeier, Speaker of the House of Delegates of the American Medical Association, and Russell B. Roth, Vice-Speaker, have been present at the last two meetings. The Speaker and Vice-Speaker from Kentucky and from the Academy of General Practice have been invited to join the group when it assembles next year in Atlanta, Georgia.

"The organization is unique. It has no officers, no constitution or bylaws, and no dues. Everyone pays his own expenses. It is intended to make this gathering an annual event, with the purpose of improving state conventions through cooperative study of the problems and goal of our profession.

"Committee appointments have been made on the basis of giving all groups representation. Geography has been considered, too. Your participation in the discussions of the Reference Committees will give balance to their conclusions.

"There are in this House of Delegates eight past-presidents acting as

Delegates or Alternate Delegates. The popular ballad, 'Kindly Step to the Rear,' does not apply to those who have reached the top in our organization. Dedication by deed is worthy of recognition."

### ANNOUNCEMENTS:

1. Doctor Hodgson read a letter from Myra A. Peters, M.D., President of Tulsa County Medical Society, extending an invitation to the the Oklahoma State Medical Association to hold its 1969 Annual Meeting in Tulsa, May 15th-17th, 1969.

*Doctor C. Riley Strong moved to accept Tulsa County Medical Society's invitation. The motion was seconded by Doctor H. E. Denyer and carried.*

2. We are hopeful that the House will complete the Opening Session by noon in order to permit Delegates to attend the free picnic luncheon and the afternoon scientific programs.

3. Reference Committees will meet at 4:00 p.m. this afternoon in the Park Avenue Suite on the Fifth Floor of the Skirvin Tower.

Doctor Richard W. Loy, Chairman of Reference Committee No. III, asked and was granted permission to start his committee meeting at 3:00 p.m.

### APPROVAL OF THE MINUTES:

Doctor Hodgson asked the pleasure of the House of Delegates regarding approval of the minutes of the last annual meeting.

*Doctor Thomas C. Points moved to approve the minutes of the last annual meeting as they were published in the Journal of the Oklahoma State Medical Association. The motion was duly seconded and carried.*

### RECESS FOR CAUCUS OF TRUSTEE DISTRICTS:

The Speaker announced there would be a ten-minute recess to allow those districts electing trustees to caucus. (Trustee Districts VI through X; also, District No. XI to fill the unexpired term of Alternate Trustee.)

The House of Delegates recessed at 9:50 a.m. and reconvened at 10:00 a.m.



## NOMINATIONS OF OFFICERS:

The House was declared open for nominations for the position of PRESIDENT-ELECT (One year term of office).

*H. E. Denyer, M.D.*, Bartlesville, was nominated by *Jess D. Green, Jr., M.D.*, Bartlesville. The nomination was seconded by Doctor *Samuel R. Turner*, Tulsa.

*William A. Matthey, M.D.*, Lawton, was nominated by *Paul N. Vann, M.D.*, Lawton. The nomination was seconded by *Arnold G. Nelson, M.D.*, Oklahoma City.

*Doctor Nelson moved to cease nominations for President-Elect. The motion was duly seconded and carried.*

Nominations were then declared open for the position of VICE-PRESIDENT (One year term of office).

*Edward K. Norfleet, M.D.*, Tulsa, was nominated by *Francis R. First, M.D.*, Checotah. *Orange M. Welborn, M.D.*, Ada, seconded the nomination.

Nominations were declared closed.

Nominations were declared open for the position of SECRETARY-TREASURER (Two year term of office).

*Stanley R. McCampbell, M.D.*, Oklahoma City, was nominated by *Arnold G. Nelson, M.D.*, Oklahoma City, and the nomination was seconded by *Thomas W. Taylor, M.D.*, Tulsa.

Nominations were declared closed.

The Speaker relinquished the chair to *Roger Reid, M.D.*, Vice-Speaker, who opened nominations for the position of SPEAKER OF THE HOUSE OF DELEGATES (Two year term of office).

*C. M. Hodgson, M.D.*, Kingfisher, was nominated by *Avery B. Wight, M.D.*, Enid.

Nominations were declared closed.

The Speaker resumed the chair and declared nominations open for the position of VICE-SPEAKER OF THE HOUSE OF DELEGATES (Two year term of office).

*Roger Reid, M.D.*, Ardmore, was nominated by *James V. Miller, M.D.*, Ardmore.

Nominations were declared closed.

Nominations were declared open for DELEGATE TO THE AMA, POSITION NO. 1 (Two year term of office).

*Francis A. Davis, M.D.*, Shawnee, was nominated by *Leon D. Combs, M.D.*, Shawnee.

*Joe L. Duer, M.D.*, Woodward, was nominated by *Richard H. Burgtorf, M.D.*, Shattuck.

Nominations were declared closed.

Nominations were declared open for ALTERNATE DELEGATE TO THE AMA, POSITION NO. 1 (Two year term of office).

*Rex E. Kenyon, M.D.*, Oklahoma City, was nominated by *Arnold G. Nelson, M.D.*, Midwest City.

Nominations were declared closed.

Nominations were declared open for DELEGATE TO THE AMA, POSITION NO. 2 (Two year term of office).

*Harlan Thomas, M.D.*, Tulsa, was nominated by *Myra A. Peters, M.D.*, Tulsa, and the nomination was seconded by *C. Riley Strong, M.D.*, El Reno, and *Marvin K. Margo, M.D.*, Oklahoma City.

Nominations were declared closed.

Nominations were declared open for ALTERNATE DELEGATE TO THE AMA, POSITION NO. 2 (Two year term of office).

*Orange M. Welborn, M.D.*, Ada, was nominated by *David C. Ramsay, M.D.*, Ada. The nomination was seconded by *Lloyd A. Owens, M.D.*, Oklahoma City, and *B. C. Chatham, M.D.*, Chickasha.

The Speaker declared nominations open for Trustees and Alternate Trustees for District VI (Three year term of office).

*M. Joe Crosthwait, M.D.*, Midwest City, and *Marvin K. Margo, M.D.*, Oklahoma City, were nominated Trustees; *Arnold G. Nelson, M.D.*, Midwest City, and *John W. DeVore, M.D.*, Oklahoma City, were nominated Alternate Trustees. *Rex E. Kenyon, M.D.*, Oklahoma City, made the nominations.

The Speaker declared nominations closed.

Nominations were opened for Trustee and Alternate Trustee from District VII (Three year term of office).

*Jerold D. Kethley, M.D.*, Shawnee, was nominated Trustee and *William C. McCurdy, M.D.*, Purcell, was nominated Alternate Trustee. Doctor *Leon D. Combs* made the nominations.

Nominations were declared closed.

Nominations were declared open for Trustees and Alternate Trustees for District VIII (Three year term of office).

*Samuel R. Turner, M.D.*, Tulsa, and *Jack L. Richardson, M.D.*, Tulsa, were nominated Trustees. *William M. Benzing, Jr., M.D.*, Tulsa, and *Paul A. Bischoff, M.D.*, Tulsa, were nominated Alternate Trustees. *Myra A. Peters, M.D.*, Tulsa, made the nominations.

Nominations were declared closed.

Nominations were declared open for Trustee and Alternate Trustee for District IX (Three year term of office).

*Francis R. First, M.D.*, Checotah, was nominated Trustee, and *Burdge F. Green, M.D.*, Stilwell, was nominated Alternate Trustee. *Tom S. Gafford, Jr., M.D.*, Muskogee, made the nominations.

Nominations were declared closed.

Nominations were declared open for Trustee and Alternate Trustee of District X (Three year term of office).

*Thurman Shuller, M.D.*, McAlester, was nominated Trustee, and *C. S. Cunningham, M.D.*, Poteau, was nominated Alternate Trustee. Nominations were made by *Jack D. Powell, M.D.*, Poteau.

Nominations were declared closed.

Nominations were declared open for Alternate Trustee to complete the unexpired term of *Henry D. Wolfe, M.D.*, Hugo (Trustee District XI).

*Alfred T. Baker, M.D.*, Durant, was nominated by *Thomas E. Rhea, M.D.*, Idabel.

The Speaker declared all nominations closed.

## REPORT OF THE PRESIDENT:

Doctor *Maxwell A. Johnson*, President, gave his report and it was referred to Reference Committee No. I. REPORT FROM THE



# BOARD OF TRUSTEES:

Doctor Samuel R. Turner, Chairman of the Board, summarized the Board of Trustees report and gave its supplemental report. These reports were referred to *Reference Committee No. I.*

# TREASURER'S REPORT:

Doctor Bob J. Rutledge, Secretary-Treasurer, reviewed his report and it was referred to *Reference Committee No. I.*

Doctor Rutledge expressed his appreciation for the privilege of serving as Secretary-Treasurer of the association for the past four years.

The Speaker advised the House of Delegates that the following council and committee reports are received and referred to the designated reference committees:

*Committee on Planning*, Ennis M. Gullatt, M.D., Chairman, referred to Reference Committee No. I.

*Financial Aid to Education Committee*, Ennis M. Gullatt, Chairman, referred to Reference Committee No. I.

*Medical School Liaison Committee*, C. Riley Strong, M.D., Chairman, referred to Reference Committee No. I.

*Council on Insurance*, C. E. Woodward, M.D., Chairman, referred to Reference Committee No. IV.

*Council on Professional Education*, John W. Drake, M.D., Chairman, referred to Reference Committee No. I.

*Council on Professional and Inter-vocational Relations*, Orange M. Welborn, M.D., Chairman, referred to Reference Committee No. II.

*Council on Public Health*, Hayden H. Donahue, M.D., Chairman, referred to Reference Committee No. IV.

*Council on Public Policy*, Kieffer D. Davis, M.D., Chairman, referred to Reference Committee No. II.

*Council on Socio-Economic Activities*, B. C. Chatham, M.D., Chairman, referred to Reference Committee No. III.

*Report of the Constitution and By-laws Committee*, George H. Garrison, M.D., Chairman, referred to Reference Committee No. I.

The Speaker announced Resolutions Numbers 1 through 5 would be

introduced by "Title" and "Resolve" and referred to reference committees as indicated and will be acted upon in the closing session of the House:

*Resolution No. 1*, entitled "Amendments to the Constitution and Bylaws of the Oklahoma State Medical Association to Increase the Membership of the Board of Trustees," was read by Doctor Paul A. Bischoff, Tulsa.

*Resolution No. 2*, entitled "Amendment to the Bylaws to Provide For the Alternate Trustee to the Chairman of the Board of Trustees to Serve as a Voting Member of the Board," was read by Doctor Bischoff.

*Resolution No. 3*, entitled "Dual Licensure of Physicians," was read by Doctor Leon D. Combs, Shawnee.

*Resolution No. 4*, entitled "Doctor-Patient Relationship," was read by Doctor Combs.

*Resolution No. 5*, entitled "Private Practice (Oath of Hippocrates)," was also read by Doctor Combs.

# REFERENCE COMMITTEE MEETING AREAS:

The Speaker urged all members of the OSMA to attend the Reference Committee Hearings, in the Park Avenue Suite on the Fifth Floor of the Skirvin Tower as follows:

Reference Committee No. I will meet in the Sutton Room at 4:00 p.m.

Reference Committee No. II will meet in the Gold Room at 4:00 p.m.

Reference Committee No. III will meet in the Lexington Room at 3:00 p.m.

Reference Committee No. IV will meet in the Madison Room at 4:00 p.m.

Doctor Hodgson also announced that a free picnic luncheon will be served in the Continental and Venetian Rooms on the 14th Floor of the Skirvin Hotel.

The Speaker then called on Doctor Roger Reid to read the Necrology Report. (A copy of the report it attached and made a part of these minutes.)

The Opening Session of the 62nd Annual Session adjourned at 11:15 a.m.

# NECROLOGY REPORT

Marguerite M. Baker, M.D., Oklahoma City

Paul B. Cameron, M.D., Pryor

Evander Evans Chambers, M.D., Enid

Paul E. Craig, M.D., Tulsa

Wallace N. Davidson, M.D., Cushing

Arthur Henry Davis, M.D., Tulsa

N. Price Eley, M.D., Oklahoma City

Brunel D. Faris, M.D., Oklahoma City

Frank E. Flack, M.D., Woodward

Willis W. Forry, M.D., Bixby

William C. Gilliam, M.D., Spiro

Robert D. Hargrove, M.D., Pawnee

Roland N. Holcombe, M.D., Muskogee

Joseph E. Hollis, M.D., Bristow

Wilkie D. Hoover, M.D., Afton

Ralph F. Martin, M.D., Sand Springs

William A. Meyers, M.D., Tulsa

Tom Hall Mitchell, M.D., Tulsa

Laile G. Neal, M.D., Ponca City

P. P. Nesbitt, M.D., Tulsa

Joseph T. Phelps, M.D., El Reno

Russell C. Pigford, M.D., Tulsa

Carroll M. Pounders, M.D., Oklahoma City

Fred C. Rewerts, M.D., Bartlesville

Charles W. Robertson, M.D., Chandler

Noah E. Ruhl, M.D., Oklahoma City

Philip M. Schreck, M.D., Tulsa

Robert M. Shepard, Sr., M.D., Tulsa

Wade H. Sisler, M.D., Tulsa

William P. Spence, M.D., Sayre

Robert M. Stover, M.D., Claremore

Charles W. Tedrowe, M.D., Woodward

William J. Trainor, M.D., Wilmington, Ohio

Milford S. Ungerman, M.D., Tulsa

Thomas Wells, M.D., Bartlesville

Stanley F. Wildman, M.D., Oklahoma City

Delbert G. Willard, M.D., Norman

John Powers Wolff, M.D., Oklahoma City

# CLOSING SESSION

# CALL TO ORDER:

The Closing Session of the 62nd Annual Meeting of the House of Delegates was called to order by the Speaker, C. M. Hodgson, M.D., at 8:55 a.m., In the Skirvin Hotel Convention Center, Oklahoma City.



C. Riley Strong, M.D., Chairman of the Credentials Committee, announced a quorum present.

#### INTRODUCTION OF GUESTS:

Doctor Hodgson introduced Richard A. Conley, M.D., Watonga, who presented an AMA Certificate for Humanitarian Services to Roy W. Anderson, M.D., Cordell, for his services in Vietnam. Doctor Conley informed the Delegates that in addition to Doctor Anderson, two other Oklahoma physicians have been awarded these certificates, David F. Watson, M.D., Muskogee, and A. M. Brown, M.D., Perry.

Russell B. Roth, M.D., Erie, Pennsylvania, Vice-Speaker of the House of Delegates of the AMA, brought greetings and expressed concern regarding the Internal Revenue Service regulations which would have the effect of taxing so-called unrelated income of non-profit corporations. He said that if the ruling stands (and is not reversed by Congress) the AMA stands to lose about \$3 million a year in revenue. This revenue includes exhibit income, advertising income, and the use of AMA mailing lists. Doctor Roth added that the Board of Trustees has considered proposing a \$30 annual dues increase to offset this loss, but at its last Board meeting the decision ended in a tie vote. Thus, the Board will not recommend a dues increase at the annual meeting in San Francisco in 1968. However, Doctor Roth said he felt the issue was important enough to bring to the attention of the physicians.

Mr. David Bickham, Edmond, Oklahoma, was introduced to the House. Mr. Bickham was recently employed in the capacity of Associate Executive Secretary.

Don H. O'Donoghue, M.D., Oklahoma City, Chairman of the Professional Advisory Committee on Medical Care for Crippled Children, was introduced and reported on the activities of the Crippled Children's program. Doctor O'Donoghue pointed out that for many years physicians have donated their services to crippled children, but since the inception of Title XVIII and Title XIX of P.L. 89-97, Oklahoma physicians

are allowed a reasonable and customary fee for services rendered.

#### REFERENCE COMMITTEE

##### REPORTS:

##### *Report of*

##### *Reference Committee No. IV*

Presented by Jack P. Myers, M.D., Chairman.

Mr. Speaker and Members of the House of Delegates:

Your reference committee gave careful consideration to the items referred to it and makes the following report:

##### *Item 1. Council on Public Health:*

Your committee recommends approval of the Report of the Council on Public Health in its entirety.

*Mr. Speaker, I move the adoption of this portion of the report. The motion was seconded and carried.* (Copy attached and made a part of the minutes.)

##### *Item 2. Report of the Council on Insurance:*

The committee recommends approval of the Report of the Council on Insurance with the following amendment:

Delete paragraphs 2 and 3 on Page 3, and insert the following sentence at the end of paragraph 1:

"The company has tentatively agreed to a 20 per cent reduction in premium."

*Mr. Speaker, I move the adoption of this portion of the report. The motion was seconded and carried.* (Copy attached and made a part of the minutes.)

##### *Item 3. Resolution No. 5:*

The committee unanimously recommends approval of Resolution No. 5. Moreover, the committee feels that if the situation as outlined in the resolution continues, it will represent a grave threat to the private practice of medicine.

The committee heartily commends Pottawatomie County Medical Society for bringing this matter to the attention of the OSMA House of Delegates.

*Mr. Speaker, I move the adoption of this portion of the report. The motion was seconded and carried.* (Copy attached and made a part of the minutes.)

*Mr. Speaker, I move the adoption of the report as a whole. The motion was seconded and carried.*

I wish to take this opportunity to thank the members of the reference committee who worked so diligently on these assigned reports.

##### *Report of*

##### *Reference Committee No. I*

Presented by Myra A. Peters, M.D., Chairman.

Mr. Speaker and Members of the House of Delegates:

Your reference committee gave careful consideration to the items referred to it and makes the following report:

##### *Item 1. Council on Professional Education:*

The committee recommends the approval of this report in its entirety.

*Mr. Speaker, I move the adoption of this portion of the report. The motion was seconded and carried.* (Copy attached and made part of the minutes.)

##### *Item 2. Report of the Medical School Liaison Committee:*

Your committee recommends the approval of this report in its entirety.

*Mr. Speaker, I move the adoption of this portion of the report. The motion was seconded and carried.* (Copy attached and made part of the minutes.)

##### *Item 3. Report of the Financial Aid to Education Committee:*

Your committee recommends the approval of this report in its entirety.

*Mr. Speaker, I move the adoption of this portion of the report. The motion was seconded and carried.* (Copy attached and made part of the minutes.)

##### *Item 4. Report of the Committee on Planning:*

Your committee recommends the approval of this report in its entirety.

*Mr. Speaker, I move the adoption of this portion of the report. The motion was seconded and carried.* (Copy attached and made a part of the minutes.)



*Item 5. Report of the Secretary-Treasurer:*

Your committee recommends the approval of this report.

*Mr. Speaker, I move the adoption of this portion of the report. The motion was seconded and carried.* (Copy attached and made a part of the minutes.)

*Item 6. Report of the President:*

Your committee recommends the approval of this report.

*Mr. Speaker, I move the adoption of this portion of the report. The motion was seconded and carried.* (Copy attached and made a part of the minutes.)

*Item 7. Report of the Constitution and Bylaws Committee:*

Your committee recommends the approval of this report with the following exception:

(a). A recommendation calls for changing the name of the Journal of the Oklahoma State Medical Association to "Oklahoma Medicine."

Your committee believes that this recommendation should be disapproved because it would negate the identification of the OSMA Journal which has been perpetuated since the organization of the association. The present name, in the opinion of the committee, is suitably descriptive of the publication and its publisher.

*Mr. Speaker, I move the adoption of this portion of the report.*

Doctor George H. Garrison moved to disapprove this portion of the committee's report, and recommend that the Editorial Board's proposal be approved by changing the name of the OSMA publication to "Oklahoma Medicine" and use the subtitle, "Official Journal of the OSMA." Doctor Malcom Phelps seconded the motion and it failed to carry.

*The original motion was seconded and carried.*

(b). Your committee wishes to amend recommendation A, 1 (page 3) by adding the name of the Atoka-Bryan-Coal County Medical Society as one which has submitted an approved Constitution and Bylaws.

*Mr. Speaker, I move the adoption of this portion of the report. The motion was seconded and carried.* (Copy of the report is attached and made a part of the minutes.)

*Item 8. Resolution No. 1:*

Your reference committee believes that the present size and composition of the Board of Trustees is satisfactory. The resolution provides that the OSMA Vice-President, the AMA Delegates and Alternates are to be included as voting members of the Board. In the opinion of the committee, this is a worthwhile purpose in seeking the advice of these officials and in keeping them well informed regarding association attitudes and policies, but does not believe that voting privileges on the Board will necessarily contribute to this purpose. The AMA Delegates and Alternates as well as all OSMA officers are routinely invited to attend all meetings of the Board of Trustees and are given the privilege of the floor. They are also provided with the proceedings of all Board Minutes.

In view of the virtues of maintaining a small and mobile Board of Trustees, and since the present system provides a check and balance by the policy-making and executive authorities, your committee recommends that Resolution No. 1 be disapproved.

*Mr. Speaker, I move the adoption of this portion of the report. The motion was seconded and carried.*

*Item 9. Resolution No. 2:*

This resolution provides that the Alternate Trustee to the Chairman of the Board of Trustees serve as a voting member of the Board, on the grounds that the Chairman of the Board is normally deprived of a vote. Your committee feels that a district represented by the Chairman of the Board is adequately compensated, and the committee wishes to observe that the Chairman still maintains a voting privilege in the event of a tie vote. The precedent for this may be observed in the organization of such bodies as the House of Representatives and the Senate, where the presiding officer of each performs in his office in the

same capacity as the Chairman of the OSMA Board of Trustees.

Therefore, your committee recommends that Resolution 2 be disapproved.

*Mr. Speaker, I move the adoption of this portion of the report. The motion was seconded and carried.*

*Item 10. Board of Trustees Report and Supplemental Report:*

Your committee recommends the approval of these reports.

Regarding recommendation No. 3 in the Board of Trustees report, your committee observes that the President of the OSMA has always been entitled to bill for expenses and mileage associated with travel within the state of Oklahoma. However, many OSMA Presidents have not opted to do so. Therefore, regarding the reimbursement of OSMA Presidents for in-state travel, your committee recommends that such officers be encouraged to take advantage of the existing policy.

Your committee concurs that some compensation should be provided to the President of the OSMA to partially offset his loss of practice time resulting from official duties. Therefore, your committee recommends that beginning with the 1968-69 organizational year, the President of the association should be provided with an annual honorarium of \$1,000, in addition to the regular expense and mileage allowance.

*Mr. Speaker, I move the adoption of this portion of the report. The motion was seconded and carried.* (Copy of the reports are attached and made a part of the minutes.)

*Mr. Speaker, I move the adoption of this report as a whole. The motion was seconded and carried.*

I wish to take this opportunity to thank the members of the reference committee who worked so diligently on these assigned reports.

#### *Report of*

#### *Reference Committee No. II*

Presented by Marvin K. Margo, M.D., Chairman.

Mr. Speaker and Members of the House of Delegates:

Your reference committee gave careful consideration to the items



referred to it and makes the following report:

*Item 1. Report of the Council on Professional and Intervocational Relations:*

Your committee recommends the approval of the report of the Council on Professional and Intervocational Relations with the following amendments:

Section I, page 3, delete paragraph 1 (next to the last paragraph), and renumber following paragraphs.

Section III, page 8, Recommendation 1, be amended to read as follows:

"1. In view of the limited amount of time your committee has had to consider the current problem with osteopathy, it is recommended that the 1965 policy statement on osteopathy be reiterated as the policy of the association; and that the Committee on Osteopathy be instructed to review and revise the 1966 guidelines for implementation of the osteopathic recognition program."

Section VI, page 12, under Recommendation, add the following paragraph:

"It is further recommended that an M.D.-member of this committee be appointed as the OSMA representative to the Advisory Council of the State Board of Nursing Examiners."

*Mr. Speaker, I move the adoption of this portion of the report. The motion was seconded and carried.* (Copy of report is attached and made a part of the minutes.)

*Item 2. Report of the Council on Public Policy:*

Your committee recommends the approval of the Report of the Council on Public Policy in its entirety.

*Mr. Speaker, I move the adoption of this portion of the report. The motion was seconded and carried.* (Copy of report is attached and made part of the minutes.)

*Item 3. Resolution No. 3:*

Your committee recommends disapproval of this resolution because of its ambiguity and vagueness.

*Mr. Speaker, I move the adoption of this portion of the report. The motion was seconded and carried.*

*Mr. Speaker, I move the adoption of the report as a whole. The motion was seconded and carried.*

*Report of*

*Reference Committee No. III*

Presented by Richard W. Loy, M.D., Chairman.

Mr. Speaker and Members of the House of Delegates:

Your reference committee gave careful consideration to the items referred to it and makes the following report:

*Item 1. Report of the Council on Socio-Economic Activities:*

*Section 1, Oklahoma Health Economic Council.* Your committee recommends adoption of this section of the report, but recommends that the word "action" be deleted in the first line, paragraph 6 on page 4.

*Mr. Speaker, I move the adoption of this portion of the report. The motion was seconded and carried.*

*Section II, Governmental Relations Committee.* Your committee concurs with the Board of Trustees' recommendation that Recommendations 1 through 5 be deleted on pages 11 and 12, and recommends continued support for the AMA Code of Ethics.

*Mr. Speaker, I move the adoption of this portion of the report. The motion was seconded and carried.*

*Section III, Medical Insurance Review Committee.* Your committee recommends approval of this section of the report.

*Mr. Speaker, I move adoption of this portion of the report. The motion was seconded and carried.*

*Section IV. Prepaid Medical Care Committee.* Your committee recommends approval of this report with the following amendments:

(1) On Page 25, paragraph A, add the following sentence after the word "program": "If a prior negotiated agreement between the physician and the patient for a fee in excess of the usual and customary fee is in effect, the physician will direct Blue Shield to make payment of the usual and customary fee to the patient and will bill the patient directly for the entire fee."

(2) On page 26, paragraph 4, change the first sentence to read: "In the event the matter is still not

resolved through the total OSMA insurance review function, payment shall be made directly to the member."

*Mr. Speaker, I move the adoption of this portion of the report.*

Doctor Garrison moved to amend paragraph 5 on page 26, to incorporate the following: "Blue Shield recognizes that a prior arrangement between the physician and his patient is the most important, and shall take precedence over any other consideration." Doctor Jack L. Richardson seconded the motion.

The preceding motion was withdrawn by Doctor Garrison and he made the following motion:

*I move the deletion of paragraph 5 on page 26. The motion was duly seconded and carried.*

Doctor Worth M. Gross moved to delete Exhibit A in its entirety. Doctor Richardson seconded the motion. A vote was taken and the motion carried. (Count: For—48; Against—37.) This action was later reconsidered.

*Mr. Speaker, I move the adoption of this portion of the report. The motion was seconded and carried.*

*Section V. Committee on Occupational Medicine.* Your committee recommends the approval of this section of the report with the following amendment: On page 39, after the last resolve, add the following additional resolve:

"BE IT FURTHER RESOLVED, that documented evidence of alleged misconduct by physicians be obtained and presented to the Grievance Committee of the Oklahoma State Medical Association for investigation."

*Mr. Speaker, I move the adoption of this portion of the report. The motion was seconded and carried.* (The report of the Council on Socio-Economic Activities is attached as finally amended.)

*Item 2. Resolution No. 4:*

Your committee, in amending the report of the Prepaid Medical Care Committee, feels that the objections referred to it have been met. Therefore, the need for Resolution No. 4 has been obviated.



Mr. Speaker, I move the adoption of this portion of the report. The motion was seconded and carried.

Mr. Speaker, I move the adoption of the report as a whole. The motion was seconded and carried.

I wish to take this opportunity to thank the members of the committee who worked so diligently on these assigned reports.

#### ELECTION OF OFFICERS:

Doctor William A. Matthey expressed appreciation for those physicians who supported him as a candidate for the OSMA President-Elect and made the following motion:

*I move to withdraw as a candidate for OSMA President-Elect; and further, that H. E. Denyer, M.D., Bartlesville, be voted President-Elect by acclamation. The motion was duly seconded and carried.*

The Speaker then announced that the following Officers and Trustees are elected by acclamation:

*President-Elect:* Hillard E. Denyer, M.D., Bartlesville.

*Vice-President:* Edward K. Norfleet, M.D., Tulsa.

*Secretary-Treasurer:* Stanley R. McCampbell, M.D., Oklahoma City.

*Speaker of the House of Delegates:* C. M. Hodgson, M.D., Kingfisher.

*Vice-Speaker of the House of Delegates:* Roger Reid, M.D., Ardmore.

*Alternate Delegate to the AMA, Position No. 1:* Rex Kenyon, M.D., Oklahoma City.

*Delegate to the AMA, Position No. 2:* Harlan Thomas, M.D., Tulsa.

*Alternate Delegate to the AMA, Position No. 2:* Orange M. Welborn, M.D., Ada.

*Trustee District VI:* Oklahoma County:

*Trustee:* M. Joe Crosthwait, M.D., Midwest City

*Trustee:* Marvin K. Margo, M.D., Oklahoma City

*Alternate Trustee:* Arnold G. Nelson, M.D., Midwest City

*Alternate Trustee:* John W. Devore, M.D., Oklahoma City

*Trustee District VII:* Cleveland, Creek, Lincoln, Okfuskee, Pottawatomie and McClain Counties:

*Trustee:* Jerold D. Kethley, M.D., Shawnee

*Alternate Trustee:* William C. McCurdy, M.D., Purcell

*Trustee District VIII:* Tulsa County:

*Trustee:* Samuel R. Turner, M.D., Tulsa

*Trustee:* Jack L. Richardson, M.D., Tulsa

*Alternate Trustee:* William M. Benzing, Jr., M.D., Tulsa

*Alternate Trustee:* Paul A. Bischoff, M.D., Tulsa

*Trustee District IX:* Adair, Cherokee, McIntosh, Muskogee, Okmulgee, Sequoyah and Wagoner Counties:

*Trustee:* Francis R. First, M.D., Checotah

*Alternate Trustee:* Burdge F. Green, M.D., Stilwell

*Trustee District X:* Haskell, Hughes, Latimer, LeFlore, Pittsburg and Seminole Counties:

*Trustee:* Thurman Shuller, M.D., McAlester

*Alternate Trustee:* C. S. Cunningham, M.D., Poteau

*Trustee District XI:* Atoka, Bryan, Coal, McCurtain and Pushmataha Counties:

*Alternate Trustee:* A. T. Baker, M.D., Durant (To fill unexpired term of Henry D. Wolfe, M.D.)

A ballot vote was taken on the contested position of *Delegate to the AMA, Position No. 1* and Francis A. Davis, M.D., Shawnee, was elected.

**NEW BUSINESS:**

Doctor Worth M. Gross moved to reconsider the original motion concerning the deletion of Exhibit A from the Report of the Council on Socio-Economic Activities, in an effort to reach an amenable program. Doctor Strong seconded the motion and it carried.

Doctor Richard W. Loy, Chairman of Reference Committee No. III, proposed the following additional amendments to Exhibit A for the Delegates' approval:

1. On page 24, paragraph III, at the end of paragraph A, add the following sentence:

"The physician's individual profile shall be available to him (and only to him) upon his written request."

2. On page 25, paragraph IV, A, add the following phrase after the word "program":

"unless Blue Shield is directed by the physician to make payment directly to the patient." and following, add a new paragraph, to-wit:

"A physician may accept or reject a U. C. R. fee on each claim submitted to Blue Shield (Therefore, each and every claim is an independent contract in itself). If U.C.R. is refused, payment will be based on the physician's previously accepted usual charge or the average charge in the physician's socio-economic area, whichever is the greater. This payment will be made to the patient."

3. On page 25, paragraph B, in the third line of sub-paragraph 1, change the word "usual" to "unusual."

4. On page 27, paragraph V, B, delete the last sentence of the paragraph.

Doctor Gross moved to accept the aforementioned changes in Exhibit A, and that this portion of the report be placed back in the Committee on Prepaid Medical Care's annual report. Doctor Strong seconded the motion and it carried.

Doctor Turner moved to suspend the rules and that the following resolution be approved. The motion was seconded by Doctor Strong and it carried:

WHEREAS, the Shepherd Foundation has established a loan fund at the O.U. Medical School for students in need of financial assistance for medical education; and

WHEREAS, the Shepherd Foundation has given approximately \$80,000 in the past to this fund; and

WHEREAS, only yesterday the Shepherd Foundation gave another \$20,000 to this fund, making a total of approximately \$100,000;

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association go on record as acknowledging this contribution and thanking Lottie Shepherd and the Shepherd Foundation for this generous gift.



BE IT FURTHER RESOLVED, that a copy of this resolution be sent to Lottie Shepherd and the Shepherd Foundation.

Doctor Hodgson expressed his appreciation to all members of the working committees of the House of Delegates, and particularly to the Reference Committee Chairmen.

The 62nd annual meeting of the House of Delegates adjourned at 11:30 a.m.

Recorded by Martina Doyle

Report of the  
COUNCIL ON PUBLIC HEALTH  
(APPROVED)

*Council Members*

Hayden H. Donahue, M.D., Norman,  
Chairman

Marvin K. Margo, M.D., Oklahoma  
City

Paul A. Bischoff, M.D., Tulsa

Wayne J. Boyd, M.D., Bartlesville

Gifford H. Henry, M.D., Tulsa

Robert E. Herndon, M.D., Chickasha

Eugene A. Owens, M.D., Lawton

George H. Guthrey, M.D., Oklahoma  
City

Mrs. Clifford M. Bassett, Cushing

Nolen L. Armstrong, M.D., Okla-  
homa City

Charles E. Smith, Jr., M.D., Okla-  
homa City

Bert T. Brundage, M.D., Thomas

Joseph M. Kelso, M.D., Oklahoma  
City

Carl D. Osborn, M.D., Ada

William N. Weaver, M.D., Muskogee

A. B. Colyar, M.D., Oklahoma City

*Committee on Alcoholism*

Charles E. Smith, Jr., M.D., Okla-  
homa City, Chairman

John M. Moore, M.D., Pauls Valley

Richard E. Carpenter, M.D., Okla-  
homa City

Frank Hladky, M.D., Tulsa

J. W. McDoniel, M.D., Chickasha

*Maternal Mortality Study*

*Committee*

Earl M. Bricker, Jr., M.D., Okla-  
homa City, Chairman

Houston F. Mount, M.D., Tulsa

Earl R. Muntz, M.D., Ada

James A. Merrill, M.D., Oklahoma  
City

Jed E. Goldberg, M.D., Tulsa

Paul A. Bischoff, M.D., Tulsa

John W. Shackelford, M.D., Okla-  
homa City

*Study Committee on New Birth and  
Fetal Death Reporting Forms*

Joseph Funnell, M.D., Oklahoma  
City, Chairman

Leo E. Yates, M.D., Oklahoma City

James B. Silman, M.D., Norman

John W. Records, M.D., Oklahoma  
City

*Safety Committee*

Robert E. Herndon, M.D., Chicka-  
sha, Chairman

Joe L. Spann, M.D., Tulsa

W. C. Click, M.D., Norman

Marvin K. Margo, M.D., Oklahoma  
City

*Committee on Immunization*

Nolen L. Armstrong, M.D., Oklahoma  
City, Chairman

J. Walker Morledge, M.D., Okla-  
homa City

Mrs. Merle D. Carter, Waynoka

Charles L. Freede, M.D., Oklahoma  
City

SECTION I

*SPECIAL COUNCIL ACTIVITIES*

*A. Cornell Automotive Crash In-  
jury Research Program:*

The Automotive Crash Injury Re-  
search Program, coordinated by the  
Cornell Aeronautical Laboratory, has  
been sponsored in Oklahoma by the  
OSMA since 1964. Findings of the  
first phase of the program (January,  
1964 to June, 1966) have been pub-  
lished and distributed statewide.

A new study is now underway: To  
obtain data on the frequency, nature  
and specific causes of injury to oc-  
cupants of recent model cars in-  
volved in rural accidents (autos five  
years or less old).

The new program began June 1,  
1967, and "sampling areas" of the  
state will survey accidents for six-  
month periods each on a rotating  
basis. The first area to participate  
encompasses Caddo, Comanche, Cot-  
ton, Creek, Grady, Jackson, Jeffer-  
son, Kay, Noble, Osage, Pawnee,  
Payne, Stephens and Tillman coun-  
ties.

Medical data submitted by physi-  
cians treating accident victims is  
matched with information on injury  
causes and accident data supplied  
by state highway patrol officers and  
is submitted to Cornell in Buffalo,  
New York, for analysis and statis-  
tical tabulation. Data thus collected

from state surveys has served to  
guide automobile manufacturers in  
making important design changes to  
improve safety.

*B. Oklahoma Interagency Council  
on Smoking and Health:*

The Council on Public Health,  
through its representatives and other  
OSMA members, continues to par-  
ticipate in the Interagency Council  
on Smoking and Health, an organiza-  
tion founded in 1964 to encourage,  
coordinate and support educational  
programs designed to discourage  
young people from smoking.

*C. Governor's Committee on  
Emergency Medical Services:*

Members of the Council on Public  
Health have participated in this ac-  
tivity since its inception in 1966.

The purpose of the Governor's  
Committee has been to bolster the  
availability and quality of ambu-  
lance service in Oklahoma.

Legislation was introduced in the  
Thirty-First Oklahoma Legislature,  
largely through the efforts of the  
Governor's Committee:

Senate Bill 48 provided that upon  
the request of municipalities, county  
commissioners could negotiate a  
contract to help underwrite the op-  
erating costs of local ambulance  
services. Despite the combined lob-  
bying efforts of health organizations,  
this bill attracted the opposition of  
most county commissioners, and it  
was virtually ruined by action of  
the House of Representatives.

House Bill 1276 would have em-  
powered the State Department of  
Health to license ambulance services  
and ambulance drivers and attend-  
ants according to minimum stand-  
ards of equipment and training. It  
was defeated in the House of Rep-  
resentatives due to the objections of  
funeral home directors.

Oklahoma physicians have par-  
ticipated in three Health Depart-  
ment-sponsored courses to train  
ambulance drivers and attendants  
as well as law enforcement person-  
nel in the care and transportation  
of the sick and injured.

Despite the legislative setbacks in  
efforts to improve a critical situa-  
tion, the association should continue  
to cooperate with the Governor's



Committee and other health organizations to seek new approaches toward solving a vital but deteriorating service.

#### D. Disaster Medical Care:

In this area of public health, the State Department of Health has announced its plans to establish a "Community Disaster Health Service Orientation, Development and Training Program." The purpose of this program is to establish community organizations made up of medical, allied-medical and civil defense personnel blended into organizations which have the authority for coordination and preplanning, and the capability for immediate effective action to care for victims of disasters.

It is not particularly a new approach to an old problem, rather, it represents a continuing effort to maintain civil defense readiness from a health standpoint.

### SECTION II

#### COMMITTEE ON ALCOHOLISM

At the request of Alcoholics Anonymous, the Council on Public Health created a special committee to deal with the increasing problem of alcoholism.

A meeting between the OSMA committee and representatives of AA resulted in the following general agreements: That the alcoholic is a problem patient; that alcoholism is one of modern society's leading health problems; that the medical profession is typically frustrated in dealing with this type of patient; and that Alcoholics Anonymous has much to offer, but is not being utilized sufficiently due to lack of communication with the medical profession.

Therefore, it was agreed to conduct pilot programs where members of the Public Information Committee of AA could meet with county medical societies for the purpose of explaining the services of AA and to develop local systems for the referral of patients. Three of these meetings were programmed by your Committee on Alcoholism.

In addition to the project, your committee arrived at the conclusion

that the OSMA should focus public attention on the problem of alcoholism by conducting a statewide Conference on Alcoholism in late 1968 or early 1969, the program to be coordinated with other groups having parallel interests.

#### Recommendations:

The Committee on Alcoholism should be continued to carry out the following projects:

1. A statewide Conference on Alcoholism should be sponsored by the OSMA in late 1968 or early 1969, to be financed largely from contributions by national organizations.

2. Meetings between county medical societies and Alcoholics Anonymous should be expanded during the next organizational year.

### SECTION III

#### STUDY COMMITTEE ON NEW BIRTH AND FETAL DEATH REPORTING FORMS

At the request of the OSMA Board of Trustees, the Council on Public Health appointed this special committee to investigate the new reporting forms issued on January 1, 1968 by the State Health Department regarding Live Births and Fetal Deaths.

A meeting between the committee and State Health Department representatives was held on March 27, 1968 for the purpose of resolving the objections held by many physicians toward the new forms. Basically, these objections related to the information required on the reverse side of the forms, as follows:

1. Physicians might be revealing privileged information concerning the patient.

2. By either omission or commission, physicians might be exposing themselves to legal liability from the standpoint of the child who would have recourse until age 21.

State Health Department officials contended that the new forms were advantageous because:

1. To maintain surveillance over birth defects resulting from potent drugs, diseases and other causes—and to facilitate research in the development of further knowledge relating to birth defects—a method for

receiving current information is indicated.

2. Such information, to be valid, must come from a large number of pregnancies, and the reporting forms are felt to be ideal vehicles for collecting information of public health value.

3. The forms were developed after a three-year national study by the National Center for Health Statistics, USPHS, and the final products are standard forms to be implemented nationally.

4. Oklahoma law requires birth and death registration, and the Attorney General has informally ruled that the release of the required information by the physician does not violate the privileged information concept.

5. The controversial information to be provided in the reverse side of the forms will not be released by the State Department of Health to the public in the form of birth and death certificates; rather, it will only be used for research purposes.

Your committee negotiated with the State Health Department to remove the name of the reported person from the back of the forms, and to actually remake the forms so that the information now on the reverse side would be printed as a detachable item which can be filed separately under a hand-numbered coding system.

This compromise was transmitted to the OSMA legal counsel along with other pertinent information, and his opinion as to liability aspects was requested.

In general, the OSMA attorney does not believe that physician-completion of the new forms will expose the respondent to any liability, since the obtaining of such information is authorized by law and the law is paramount to the concept of privileged communication. Moreover, he feels that your committee's compromise effort to develop the perforated form represents an improvement.

#### Recommendations:

1. That the OSMA House of Delegates approve the proposed perforated forms for the reporting of Live Births and Fetal Deaths.



2. That this approval, and the valid public health reasons which justify the new forms, be communicated to the entire membership of the association by letter.

#### SECTION IV SAFETY COMMITTEE

The Safety Committee was created by the Council on Public Health for the special purpose of advising the Department of Public Safety regarding the drafting and implementation of House Bill 807 (30th Oklahoma Legislature) which had the effect of establishing the Medical Advisory Board for Driver Licensing.

The advisory board has the authority under the law to recommend standards for determining the physical, emotional and mental capacity of applications for drivers' licenses, and for holders of drivers' licenses. In questionable cases, the advisory board may consider these standards in light of the individual's own compensating abilities and thereby make recommendations regarding his licensure to the Department of Public Safety.

To implement the advisory board activity, the Safety Committee recommended that the initial board be comprised of Oklahoma City physicians representing appropriate special medical interests. This pilot board is to serve the Department of Public Safety for a period of about two years, after which additional advisory groups may be formed in other parts of the state.

The pilot board is staffed by the State Department of Health, and the physician members are anonymous to protect them from public pressure in their deliberations. Special forms and procedures have been developed for processing the examinations of marginal drivers, and the advisory board review function is now in full operation.

More than three hundred cases have been reviewed to date. The majority have been approved on the basis of issuing restricted licenses and/or requiring follow-up medical attention. About 20 per cent are rejected until re-examined after a one-year period. A small percentage of alcoholics, addicts, and persons

with emotional disorders have been rejected to be re-examined in two years.

#### SECTION V COMMITTEE ON IMMUNIZATION

The Committee on Immunization has served in a capacity to the State Department of Health in carrying out its overall communicable disease program and, specifically, the OSMA committee has directly participated in sponsoring March, 1968, as "Immunization Month."

The State Department of Health's overall campaign may be summarized as follows:

1. Long Term:

A. Practical eradication of measles, polio, diphtheria, pertussis, and tetanus.

2. Short Term:

A. Eradication of Rubeola.

B. Infant immunization maintenance, including education of parents and collection of information on pre-school immunization levels.

C. Establishment of a statewide school reporting program for childhood diseases, to identify outbreaks and epidemics.

D. Establishment of school-centered immunization level surveillance.

E. Promotion of community immunization clinics according to need, based upon sponsorship of county medical societies and civic organizations.

F. Distribution of health education materials.

G. Sponsorship of statewide "Immunization Month" for March, 1968.

H. To seek goal of 75 per cent immunization of all pre-school children.

In carrying out these programs, it has been noted that medical reporting of communicable diseases has not been sufficient to aid in determining the early states of epidemics. Cards for reporting such diseases are normally only sent to physicians on request. However, 1,000 physicians have been selected as a sample. They have been furnished with cards and are routinely sent a bulletin on state communicable diseases.

Regarding "Immunization Month," the Chairman of the OSMA Committee on Immunization was selected as state chairman of the activity.

The objectives of "Immunization Month" may be generally described as effecting a statewide educational and motivational program, stressing the necessity for adequate immunization of children and adults against preventable disease, and utilizing mass media and other communications techniques.

Some of the activities carried out are itemized below:

1. Governor Bartlett issued a proclamation, and photos of the Governor, the Immunization Month Chairman and the Commissioner of Health were distributed statewide to newspapers.

2. The State Chairman and the Commissioner of Health appeared on a variety of television shows.

3. Television and radio spot announcements were employed (estimated that \$8,000 worth of television time and \$3,500 worth of radio time were obtained).

4. Thirty billboards were employed featuring a cartoon character, "Emmy Immunity." (Estimated that \$2,000 worth of space was provided.)

5. Wallet-size Immunization Record Cards were distributed statewide.

6. Nearly 150,000 pieces of literature were distributed.

7. Measles posters were placed in 1,375 locations.

8. All daily and weekly newspapers received extensive sets of news releases on the subjects of immunization and preventable diseases.

The program was considered by State Department of Health officials to be one of the most successful ever conducted. For example, during the last quarter of 1967, only 8,571 doses of measles vaccine were given statewide, but "Immunization Month" publicity boosted the first quarter of 1968 to 13,663 doses. A similar increase was reflected in diphtheria-tetanus: A boost from 13,760 to 16,200.



Report of the  
COUNCIL ON INSURANCE  
(APPROVED AS AMENDED)

*Council Members*

C. E. Woodard, M.D., Tulsa, Chairman  
Jack D. Fetzer, M.D., Woodward  
Paul H. Rempel, M.D., Enid  
C. Alton Brown, M.D., Oklahoma City  
Samuel R. Turner, M.D., Tulsa  
James Beavers, M.D., Oklahoma City  
Robert W. Kahn, M.D., Oklahoma City  
Myra Peters, M.D., Tulsa  
Richard H. Burgtorf, M.D., Shattuck  
Maurice C. Gephardt, M.D., Muskogee  
James W. Murphree, M.D., Ponca City

SECTION I

DISABILITY INCOME PROGRAM

The disability income insurance program is underwritten by the Insurance Company of North America and is administered by C. L. Frates and Company, Oklahoma City.

There are 762 physicians insured under the program. Since the plan began in 1961, premiums received total \$983,280.43 and paid claims and loss reserves amount to \$546,458.31, developing an overall loss ratio of 55 per cent. However, for 1967, \$107,042.38 was paid out against \$155,128.62 in premium income.

The OSMA program offers a benefit structure comparable to the best on the market, and is eight to ten per cent less expensive than competitive programs available to Oklahoma physicians.

Contrary to some medical association sponsored programs, the OSMA plan has a seven-year history of stability. No rate increases have been necessary, and due to a favorable loss ratio, the company has expanded the benefit structure.

OSMA's program allows a physician to select from a number of waiting period options as well as the monthly indemnity he chooses to carry (from \$200 per month to \$800 per month). He may also select

from three options as to the duration of payments for sickness disability—three years, five years, or to age 65—and benefits are payable for life in disability cases due to accidents.

An optional feature provides \$15 per day hospitalization benefit for up to 120 days per illness at the nominal premium of \$18 per year.

SECTION II

OVERHEAD EXPENSE PROGRAM

The association's overhead expense program is provided by the Continental Casualty Insurance Company through the C. L. Frates agency.

This program indemnifies physicians against the costs of keeping their offices open during periods of disability. The premiums are tax deductible. There are currently 161 physicians enrolled.

Up to \$1,000 a month indemnity has been available, benefits are paid for up to 18 months, and optional waiting periods of 15 or 30 days may be selected.

The losses under this program have been exceptionally low. Paid claims have amounted to only \$29,357.03 against \$123,022.57 in premium income.

Because of the continued low losses, the Council on Insurance has requested and received more liberal benefits from the insurance company (effective June 1, 1968). The company has tentatively agreed to a 20 per cent reduction in premium.

SECTION III

GROUP TERM LIFE INSURANCE

The life insurance program is underwritten by the Massachusetts Mutual Life Insurance Company and is administered by Wilson and Wilson, Inc., Oklahoma City.

For the year ending March 31, 1968, there were 356 physicians participating.

From the inception of the program in 1956, \$962,078 has been paid in expenses and death benefits to the survivors of Oklahoma physicians. However, only \$770,057 has been received in premium income. Thus, the company has experienced an accumulated deficit of \$192,021.

For this justifiable reason, the company requested a 25 per cent premium increase effective April 1, 1968.

The Council on Insurance asked the insurance agent, Mr. Walter C. Wilson, to solicit bids from other major companies in an effort to hold the premium at the same level. An acceptable bid was received from the Mutual Benefit Life Insurance Company to pick up the program at the existing premium rates. However, this plan was frustrated by a provision in the Oklahoma Insurance Code which restricts new group term life insurance programs to a maximum death benefit of \$10,000 (the OSMA plan operates under the 1956 insurance laws and contains individual death benefits as high as \$33,125).

Because your Council on Insurance did not desire to reduce coverage limits, an effort was made to have Mutual Benefit assume the old program of Massachusetts Mutual and thereby avoid the application of current statutory restrictions. Although a favorable ruling was obtained by the current Insurance Commissioner, the Council on Insurance decided that it would be unwise to involve the profession in such a tenuous arrangement.

Therefore, a decision was made to retain the Massachusetts Mutual coverage on the basis of raising the annual premium from \$125 to \$150 (the company had requested a rate of \$156.25). This proposal was made to Massachusetts Mutual and was accepted.

The OSMA program is still quite competitive with other life insurance programs. For example, a male age 40 could purchase an individual policy having the same death benefit as the OSMA plan (\$21,625) for \$198.98 per year. However, this policy would not include the accidental death benefit and dismemberment coverage like the OSMA policy.

Premium notices at the rate of \$150 have been mailed to participating physicians, and early returns indicate that the vast majority of OSMA members are renewing their coverage.



SECTION IV  
PROFESSIONAL LIABILITY  
PROGRAM

The professional liability program is underwritten by the Insurance Company of North America and is administered by the C. L. Frates and Company insurance agency, Oklahoma City.

When the House of Delegates decided to switch its endorsement of a preferred malpractice carrier to INA on January 1, 1967, considerable opposition was generated by the former carrier and a competitive situation developed over physician-enrollment in the two plans.

Nearly 900 state physicians have joined the INA plan to date, however, and the competition has subsided. Loss experience during the first year of operation has been extremely favorable.

The Insurance Company of North America, in keeping with its agreement with the OSMA, has now established a dividend arrangement, effective January 1, 1968. Under this plan, participating physicians will be entitled to up to 10 per cent premium dividends in any year where a favorable loss ratio is recorded.

In order to achieve the dividend arrangement, INA is now offering professional liability protection through its owned subsidiary, the Pacific Employers Indemnity Company. This step was necessary because the parent company does not maintain dividend filings with state insurance departments since it prefers to use subsidiary companies to handle these special accounts. The same stability is still available, however, since INA reinsures 100 per cent of all PEIC losses. Also, the association's agreement with INA concerning the management of the program remains in force.

If the loss experience continues as in the past, then there is a favorable chance for a dividend to be issued to participating physicians as of January 1, 1969.

Thus, INA and PEIC offer the OSMA members a unique dividend-type program which holds promise of reducing premium costs for professional liability coverage.

Moreover, INA-PEIC basic rates are now materially less than those major companies which follow the recommendations of the National Bureau of Casualty Underwriters, a rating group which recently advised a substantial premium increase for the Oklahoma market.

SECTION V  
DEFERRED COMPENSATION  
PROGRAM

At the 1966 meeting of the House of Delegates, your Council on Insurance reported that it was investigating the development of a retirement plan for OSMA members based upon the Deferred Compensation principle. The Delegates approved this interim report with the proviso that the final product of such efforts be presented to the House of Delegates for approval prior to implementation.

The concept of a Deferred Compensation plan was presented to the House in 1966 as follows:

"Operating under the theory that if a person delays receiving income the Federal government will wait to receive its tax, the physician could authorize Oklahoma Blue Shield to defer a percentage of his Blue Shield earnings (estimated ten to 40 per cent) and to invest such amount in a retirement program. The entire amount of income set aside in this manner would not be subject to current income taxes, and neither would the physician be required to establish comparable retirement programs for his employees as in the case of Keogh programs."

Further evaluation of the program by your Council on Insurance revealed the following:

1. Only two insurance companies are known to have received favorable rulings from the Internal Revenue Service—Mutual Benefit Life Insurance Company and Phoenix Mutual—and neither of them has a complete set of rulings to both protect the non-profit tax status of Blue Shield and to assure the physician that his deferred income is not currently taxable. (Mutual Benefit has a ruling to protect the taxpayer and Phoenix Mutual has one to protect the carrier.)

2. Although Phoenix Mutual apparently has operated programs of this type successfully for a number of years, there is no assurance that participating physicians will not be subjected to the payment of back taxes and interest at the whim of IRS.

3. Oklahoma Blue Shield, although expressing willingness to cooperate, would require its own IRS ruling to protect its non-profit tax status, and it is estimated by legal counsel that such might take three to four years to obtain, if obtainable at all.

4. The entire arrangement, although appealing on the surface, is tenuous from the IRS standpoint.

Therefore, the development of a Deferred Compensation Program does not appear to be a practical alternative to the existing avenue for tax relief provided under the Keogh Law, and the Council on Insurance does not recommend that the association become involved in such an uncertain arrangement at this time.

Report of the  
COUNCIL ON PROFESSIONAL  
EDUCATION  
(APPROVED)

*Council Members*

John W. Drake, M.D., Oklahoma City, Chairman

Irwin H. Brown, M.D., Oklahoma City

John L. Hackney, M.D., Edmond

C. K. Holland, M.D., McAlester

Frank H. Austin, M.D., Lawton

Orange M. Welborn, M.D., Ada

James F. Tagge, M.D., Enid

Marcella R. Steel, M.D., Tulsa

Ann K. Kent, M.D., Muskogee

William A. Crockett, M.D., Woodward

Kelly M. West, M.D., Oklahoma City

Jack T. Terry, M.D., Ponca City

Bartis Kent, M.D., Muskogee

Rex M. Graham, M.D., Miami

Jess D. Green, Jr., M.D., Bartlesville

*Regional Medical Program Liaison  
Committee*

Marvin K. Margo, M.D., Oklahoma City, Chairman

James H. Bushart, M.D., Lawton

James G. Moore, M.D., Tulsa

Joe L. Spann, M.D., Tulsa



Ollie McBride, M.D., Ada  
George M. Brown, Jr., M.D., McAlester  
Mark R. Johnson, M.D., Oklahoma City  
Lloyd L. Long, M.D., Ardmore  
Paul H. Rempel, M.D., Enid  
*Health Careers Committee*  
Marcella R. Steel, M.D., Tulsa, Chairman  
James G. Moore, M.D., Tulsa  
Joella Pyeatte, M.D., Tulsa  
Robert Sukman, M.D., Oklahoma City  
Mrs. Port Johnson, Muskogee  
William T. Snoddy, M.D., Oklahoma City  
Joseph M. White, M.D., Oklahoma City  
Mrs. Arthur N. Springall, Oklahoma City

#### SECTION I

##### POSTGRADUATE EDUCATION

For the past eight years, the association has been in partnership with the OU Medical Center's Postgraduate Education Office in producing regional postgraduate courses throughout the state.

Nine courses were offered to Oklahoma physicians during the last organizational year. These were conducted in Ada, Edmond, Enid, Lawton, McAlester, Miami, Muskogee, Ponca City and Woodward. A total of 217 physicians participated in the series.

The courses, which deal with the basic science and clinical aspects of organ systems, feature four hours of instruction and dinner for a modest fee of \$7.50.

Although the courses are felt to have considerable scientific merit, and while they are decentralized to provide the maximum convenience for our members to attend, registration has been disappointing. The poorest response was in Woodward, where only eight physicians participated, and the best was in Ada, where thirty physicians registered.

Educational television is another medium which has been utilized for postgraduate education purposes. The association has cooperated with KETA-TV, KOED-TV, the OU Med-

ical Center's Postgraduate Education Office, and the Oklahoma Educational Television Authority in showing 39 television programs during the year. The programs have been telecast on Tuesdays, once in the morning and the same program repeated at night. Films on a variety of subjects are acquired through exchanges with other medical centers and by original production at the OU Medical Center.

##### *Recommendations:*

1. That the Educational Television courses be continued and that \$2,000 be allocated in the OSMA budget to defray these expenses.

2. That the House of Delegates, as a representative body, advise the Council on Professional Education as to whether or not the Regional Postgraduate Courses should be continued.

If an affirmative answer is given, then it will be necessary to appropriate \$1,600 from the budget to these courses, although this figure will be approximately offset through tuition income.

#### SECTION II

##### REGIONAL MEDICAL PROGRAM LIAISON COMMITTEE

The OSMA committee has the responsibility for maintaining liaison between the association and the Oklahoma Regional Medical Program, for which the planning agency is the University of Oklahoma Medical Center.

In addition to this liaison, the medical profession is amply represented on the Regional Advisory Council, the statutory advisory group provided by Federal enabling legislation. Moreover, the profession is strongly represented on three area planning groups and on other specialized planning and advisory committees associated with various aspects of the overall Regional Medical Program.

The Oklahoma Regional Medical Program is an undertaking of the citizens of Oklahoma designed to attack the major causes of death (cancer, stroke, heart disease and closely related diseases such as pulmonary emphysema, diabetes, and kidney disorders). ORMP is financed through grants from the National

Institutes of Health, but it is planned and supervised locally under the administrative direction of Kelly M. West, M.D.

As stated in the Federal law, Public Law 89-239, the purposes are:

1. To encourage and assist in the establishment of regional cooperative arrangements among medical schools, research institutions, and hospitals for research and training and for related demonstrations of patient care in the prescribed fields of disease; and

2. To afford the medical profession and institutions the opportunity to utilize the latest advances in the diagnosis and treatment of these diseases; and

3. By these means to improve generally the health manpower and facilities to accomplish these ends in cooperation with practicing physicians, medical center officials, hospital administrators, and representatives from appropriate health agencies.

The Federal act prohibits interference with the patterns, or the methods of financing, of patient care or professional practice, or with the administration of hospitals.

ORMP has received three planning grants since September, 1966. An application to finance continued planning and for the beginning of operational projects will be submitted in August after review and approval by the Regional Advisory Council.

Primary emphasis for the ORMP activities revolve around increasing the effectiveness and efficiency of medical care through voluntary collaborative arrangements, to improve prevention and treatment of the major diseases by bringing the latest medical advances as close to the community level as possible, and to improve local opportunities for continuing education.

Special activities of the Oklahoma Regional Medical Program are mentioned below:

1. ORMP is co-sponsoring the Oklahoma Council for Health Careers, a voluntary organization whose purpose is to alleviate severe shortages in professional and paramedical fields.



2. ORMP is cooperating in the long-range planning for improved library services at the University of Oklahoma Medical Center, such services to serve as the nucleus for a statewide medical library system in cooperation with existing medical libraries and licensed hospitals.

3. ORMP is conducting a pilot study of patient referral patterns in the Muskogee area. This program is being coordinated with the Comprehensive Health Planning Program (Public Law 89-749 and Public Law 90-174).

4. ORMP has brought together representatives of 24 state hospitals for the purpose of receiving advice regarding general and specific planning and operational priorities for cooperative programs in keeping with ORMP objectives.

5. ORMP, working with an advisory group, has undertaken a study on cancer mortality rates.

6. ORMP is evaluating the effectiveness of computer-assisted instruction in the continuing education of health professionals. The planning committee on this program has hosted a national meeting on the subject.

7. ORMP and the U.S. Veterans Administration are sponsoring a regional proposal to link the University of Oklahoma, the Oklahoma City VA Hospital, the Muskogee VA Hospital and other cooperating groups in a collaborative enterprise to increase the capacities of these institutions to produce health manpower and to further continuing education.

8. ORMP has established regional planning activities in Enid, Ada and Tulsa.

9. ORMP is developing a program to train professional personnel (and non-professional personnel on an experimental basis) in electrocardiography, with an ultimate objective of establishing computerized regional coronary care units.

10. ORMP is sponsoring a developmental plan to test the feasibility of a low-cost mass screening program for heart murmurs among children using newer technical instruments which can be operated by non-physicians.

11. ORMP is planning its first operational program, a regional activity in the field of pulmonary emphysema. A training program will be established at the OU Medical Center, a model program for the detection and treatment of the disease will be developed, field tests will be conducted by two participating hospitals, and further development will be aimed toward applying the program to other state hospitals.

#### *Recommendations:*

1. Although this report is for informational purposes, it is recommended that the OSMA maintain continuing liaison with the Oklahoma Regional Medical Program.

### SECTION III HEALTH CAREERS COMMITTEE

Activities in the health careers area have been confined to the development of the Oklahoma Council for Health Careers. Three representatives of the medical profession serve on the Board of Directors of this new organization: Marcella R. Steel, M.D., Thomas C. Points, M.D., and Mrs. Arthur N. Springall (Woman's Auxiliary).

The background, organization and operation of the Council are outlined below:

Health career recruitment in Oklahoma had its beginning years ago with the activity of the Oklahoma State Nurses Association and the Woman's Auxiliary to the Oklahoma State Medical Association. Recruitment efforts were primarily for future doctors and future nurses.

In the early 1960's a Joint Careers Committee was organized to broaden recruitment and promotional efforts. At this time, other health professional associations and the State Hospital Auxiliary were invited to participate. The program, at this time, consisted primarily of an annual health career rally day for high school health science clubs. The counselling sessions and tours were conducted at the University of Oklahoma Medical Center.

Soon after the organization of the Joint Careers Committee, it became apparent that Oklahoma needed a well-financed organization with full-

time staff that could devote their entire efforts toward promoting and recruiting young people into the health professions. A sub-committee of the Joint Careers Committee developed tentative bylaws for an organization known as the Oklahoma Council for Health Careers. The major problem faced by the committee was how to finance a statewide program.

Kelly West, M.D., then acting Director of the Oklahoma Regional Medical Program, proposed a consortium between Oklahoma's Regional Medical Program and the Oklahoma Council for Health Careers to develop ways and means of alleviating Oklahoma's health manpower shortage. Doctor West proposed that the Regional Medical Program could provide staff salaries, office space and equipment if the Oklahoma Council for Health Careers could provide funds for materials to be used in promoting health careers and in providing information to high school and college students.

On August 18, 1967, at the OSMA executive office, Mr. Don Blair chaired the organizational meeting of what is now the Oklahoma Council for Health Careers. At this meeting, Thomas C. Points, M.D., was elected Chairman of the Board, and Mr. Kenneth Hager was selected as the Executive Director. The bylaws that had been developed by the sub-committee of the Joint Careers Committee, were also adopted at this meeting. Organizations represented at this meeting were:

Oklahoma Occupational Therapy Association  
Oklahoma Physical Therapy Association  
Oklahoma Society of Medical Technologists  
Oklahoma Hospital Association  
Oklahoma State Medical Association  
Oklahoma State Nurses Association  
Oklahoma Dietetic Association  
Oklahoma League for Nursing

The office of the Council was established on September 5, 1967, at 619 Northeast 15th Street in Oklahoma City.



The purposes of this Council are to coordinate, develop, facilitate, maintain and promote programs or other activities calculated to interest individuals in choosing and preparing for careers in the health services.

There are two classes of membership in the Council: Participating Members and Associate Members. Participating Members are organizations whose members are professional practitioners and those organizations who are major employers of health personnel. Associate Members are other organizations who desire to contribute financially toward the objectives of the Council. The dues for the Participating Members are \$2.00 per dues-paying member per year for associations with individual members (\$3,600 a year for the OSMA). For associations whose members are employers of health personnel, the dues are 50c per bed per year, not to exceed \$5,000. The minimum dues for Associate Members are \$100. At the present time Participating Members include:

Oklahoma Association of Medical Record Librarians  
Oklahoma Hospital Association  
Oklahoma State Medical Association  
Oklahoma Chapter, American Physical Therapy Association  
Oklahoma Society of Medical Technologists  
Oklahoma Dietetic Association  
Oklahoma League for Nursing  
Oklahoma State Nurses' Association  
Oklahoma Occupational Therapy Association  
Oklahoma Podiatry Association  
Associate Members include:  
Oklahoma Blue Cross and Blue Shield  
Oklahoma City Area Hospital Council  
Woman's Auxiliary to the OSMA  
Mercy Hospital Woman's Auxiliary  
Medical Service Society  
Northwest Community Hospital, Mooreland  
University Hospitals Volunteers Auxiliaries

Oklahoma Heart Association  
Oklahoma State Vocational-Technical Education  
Oklahoma State Association of Licensed Practical Nurses  
St. John's Hospital Auxiliary  
Okmulgee Memorial Hospital Auxiliary

Dues collected to date for Participating Members—\$11,518.42. Dues from Associate Members—\$6,275.00. Receipts from sale of bill-board posters equal \$290.00. Total revenue to date, excluding Regional Medical Program participation, is \$18,083.42. Oklahoma Blue Cross and Blue Shield contributed \$5,000.00 as an Associate Member.

During the first few months following the organization of the Council, the staff devoted its time in the following way:

1. Conducted a statewide survey to determine all health educational and training programs in Oklahoma. After data were compiled, a directory was printed and distributed. This was the first such attempt to develop a profile of Oklahoma's health educational and training programs below the doctorate level. It was necessary to complete this project before informational material could be developed and sent to students.

2. Promoted the Council's activities through several television appearances. Two 15-minute shows were conducted on the educational channel, prime target being the homeroom class of high schools. The Council's staff was invited to participate in three other television programs during National Health Week.

3. Set up booth displays at fairs and other annual meetings.

4. Developed GUIDELINES for communities to use in conducting their own Health Career Rally Days. These GUIDELINES were distributed to presidents of the county organization of the Woman's Auxiliary to the Oklahoma State Medical Association, presidents of hospital auxiliaries, hospital administrators, and to presidents of district nurse associations. The acceptance and activity that has resulted has been all but overwhelming. Many communities

are inviting high school and college students in for counseling sessions and tours of the health facilities.

5. Council staff has participated in and has coordinated speakers for many high school health career programs.

6. The Council has distributed 100,000 of the brochure, "200 GREAT FUTURES," in more than 900 locations in the State of Oklahoma. These locations include secondary schools, colleges, universities, and hospitals. The brochure is designed to stimulate young people. They detach a section of the brochure and indicate the medical careers in which they are interested, write in their name, age, address, and mail it. The Council has preprinted brochures on many medical careers, and these are sent to the students by return mail. All information that appears on the request card is keypunched for fast print-outs and research projects. These names comprise what we call the MANPOWER POOL. At the end of each month, names, ages and addresses and telephone numbers are printed out according to career choice. In other words, at the end of each month, each of the ten schools of nursing receive a list of students interested in nursing. At the present time, the MANPOWER POOL exceeds 2,000 boys and girls.

Some of the activities the Council is involved in at the present time are:

1. Developing a comprehensive Directory of Scholarships, Grants, and Loans available to high school and college students.

2. The Council plans to charter all high school health science clubs in Oklahoma and provide them with extensive services such as:

- a. Packaged programs for the regular monthly meetings
- b. Field trips
- c. Health Career Rally Days
- d. Annual meeting with selection of State Officers.

3. The Council is continuing to solicit financial support from other health professional associations and organizations interested in the Council's activities.



Current activities are primarily attempts to fill the existing health educational training programs in Oklahoma with top quality students. However, the Council realizes that one of the greatest needs in our state is for additional educational and training programs. Numerous meetings have taken place with the Association of Junior College Presidents of Oklahoma, with representatives of the American Association of Junior Colleges, and with presidents and deans of many colleges and universities in an effort to stimulate the development of new programs.

Time will prove the Council to be a valuable tool to high school and college students, educational institutions, health care facilities, professionals, professional associations, and the overall health and welfare of our citizens.

#### *Recommendations:*

1. It is recommended that the House of Delegates ratify the decision of the OSMA Board of Trustees to participate in the Oklahoma Council for Health Careers at an annual dues rate of \$3,600.

#### Report of the MEDICAL SCHOOL LIAISON COMMITTEE (APPROVED)

##### *Committee Members*

C. Riley Strong, M.D., El Reno,  
Chairman  
James L. Dennis, M.D., Oklahoma  
City  
Edward K. Norfleet, M.D., Tulsa  
William P. Jolly, M.D., Lawton  
Robert S. Ellis, M.D., Oklahoma  
City  
C. L. Tefertiller, M.D., Altus

The committee has continued to inform itself of the current developments affecting the University of Oklahoma Medical School and has recommended specific action where these developments have affected the planned Oklahoma Health Center.

The ten-year, three phase \$185 million program for the development of the integrated Oklahoma Health Center is the most significant program influencing the medical school and in fact, is the most significant de-

velopment influencing health education in the state.

The desire to supply highly qualified, trained medical personnel for effective economical health care throughout the state, is the basic premise on which the ambitious expansion program is founded.

The 200 acre plus project area is to be developed in three phases, as follows:

##### *Phase #1 (To begin in 1967 and to be completed in 1972):*

- a) University Hospital (200 beds)
- b) Basic science medical education building
- c) New school of nursing
- d) Student union
- e) Auditorium and general facilities
- f) Remodeling and renovation of existing facilities
- g) School for allied manpower
- h) Ambulatory medical clinics
  - i) Land acquisition
  - j) School of Public Health
  - k) School of Dentistry
    - l) Dental clinics
  - m) Rehabilitation and chronic disease
  - n) Administrative facilities
  - o) Graduate education center

Total Cost (Estimated) \$31,900,000

##### *Phase #2 (To begin in 1969 and to be completed in 1972):*

- a) University Hospital expansion (200 beds)
- b) Basic science, faculty offices and resource facilities

Total Cost (Estimated) \$23,550,000

##### *Phase #3 (To begin in 1972 and to be completed in 1976):*

- a) Institute of Mental Health
- b) New Children's Hospital
- c) Animal and veterinary facilities

Total Cost (Estimated) \$25,500,000

As evidenced by the above, the completed complex would provide the ultimate in facilities for health education and care. This concentration of facilities and personnel will enable the "Health College" to train a greater number of medical personnel and more efficiently.

The Oklahoma Health Science Foundation, established by invitation of former Governor Henry Bellmon, is charged with the responsibility of the orderly development of the com-

plete "Health Campus." The Foundation, headed by Dean A. McGee and supported by an impressive list of prominent Oklahomans, has completed a master plan which considers site planning, land acquisition, architectural appearance, landscaping and central service and facilities. (Note: Oklahoma Health Sciences Foundation has a booth in the Exhibit Hall.)

A unique feature in the "Plan" is the economy accomplished by centralizing common facilities, services, and purchasing while each agency retains its autonomy and administrative control. It is obvious that interagency cooperation is essential to the success of the Health Center.

Funding of the project is to come from Federal grants, a statewide bond issue and private sources. It is anticipated that over \$100 million in private capital will be invested in the project area and Federal and State governments will contribute equally in the \$80 million plus balance.

The basic science building, a part of the first phase, funded by a 1963 bond issue, is under construction. This facility, adding needed classroom space, will allow for expansion of the 1968 Freshman class by 25 students.

Final plans for the new 200 bed University Hospital, also funded by the 1963 bond issue, are being drawn.

A Senate Joint Resolution calling for a statewide referendum on a bond issue proposal providing \$26,870,000 for the completion of Phases #1 and 2 of the medical school complex was passed and signed by the Governor.

This committee, in joint session with the OSMA State Legislative Committee, recommended that the Legislative Committee approve and support the development of the medical center complex and the statewide bond issue necessary for funding that development.

#### *Recommendation:*

It is the recommendation of this committee that the OSMA House of Delegates approve in concept the expansion of the University of Oklahoma Medical School Complex and



support the proposed bond issue for funding of same.

Report of the  
FINANCIAL AID TO EDUCATION  
COMMITTEE  
(APPROVED)

*Committee Members*

Ennis M. Gullatt, M.D., Ada, Chair-  
man

Maxwell A. Johnson, M.D., Tulsa  
Harlan Thomas, M.D., Tulsa  
Scott Hendren, M.D., Oklahoma City  
Rex Kenyon, M.D., Oklahoma City

A report on deposits and disburse-  
ments, September, 1962 through May  
17, 1968 appears below:

INCOME

Deposits from	
OSMA Dues	\$60,223.18
Interest Earned	819.07
Loan Repayments	1,696.50
<b>TOTAL</b>	<b>\$62,738.75</b>

EXPENSE AND  
COMMITMENTS

Scholarships	
Awarded (30)	\$14,750.00
Scholarships	
in Process (5)	2,500.00
Loans Granted (71)	31,050.00
Loans in Process (10)	5,000.00
Matching Funds for	
Federal Loan Program	5,000.00
<b>TOTAL</b>	<b>\$58,300.00</b>
<b>BALANCE</b>	<b>\$ 4,438.75</b>

The foregoing figures include ten  
loan applications approved for pro-  
cessing on April 21, 1968, and five  
scholarships for the following mem-  
bers of the 1968 Freshman Class:

David H. Kahn  
Haskell Lee Head  
William W. Cook  
Georgene Schmeckpeper  
Michael E. Karasck

A sum of \$5,000 was authorized by  
the House of Delegates at its 1967  
annual meeting to assist the Uni-  
versity of Oklahoma School of Med-  
icine in qualifying for federal stu-  
dent loan funds on a ten-to-one  
matching formula.

In addition to this direct contribu-  
tion by the OSMA, association mem-

bers responded to a voluntary solici-  
tation by sending about \$5,000. Thus,  
OSMA members assisted the school  
in raising federal loan funds of about  
\$100,000.

Regarding the balance of \$4,438.75  
in the loan program, additional loan  
applications will be considered this  
summer for student use during the  
first semester of the 1968-69 aca-  
demic year.

Report of the  
COMMITTEE ON PLANNING  
(APPROVED)

*Committee Members*

Ennis M. Gullatt, M.D., Ada, Chair-  
man

C. M. Hodgson, M.D., Kingfisher  
C. E. Woodard, M.D., Tulsa  
Samuel R. Turner, M.D., Tulsa  
Scott Hendren, M.D., Oklahoma City  
Hayden H. Donahue, M.D., Norman  
Orange M. Welborn, M.D., Ada  
Maxwell A. Johnson, M.D., Tulsa  
Kieffer D. Davis, M.D., Bartlesville  
John W. Drake, M.D., Oklahoma City  
B. C. Chatham, M.D., Chickasha

SECTION I  
GENERAL

At the 1967 annual meeting of the  
House of Delegates, the Secretary-  
Treasurer recommended that the  
Committee on Planning make rec-  
ommendations on the use of savings  
for non-capital expenditures, study  
the feasibility of expanding the as-  
sociation headquarters building, and  
explore new sources of earned in-  
come.

The committee recommended to  
the Board of Trustees on October 8,  
1967, that a feasibility study for  
building expansion be authorized,  
and that uncommitted savings be  
restricted for building purposes un-  
til such time as the feasibility study  
was completed and acted upon. It  
was also recommended that the name  
of the savings accounts be changed  
to "Replacement, Depreciation and  
Operational Fund." The Board of  
Trustees approved all of these rec-  
ommendations.

A final report on the building ex-  
pansion recommendations and on  
other committee actions follows:

SECTION II  
COMMITTEE ACTIONS

A. *Membership Promotion:*

To obtain maximum revenue from  
dues, the committee recommended  
to the Board of Trustees that the  
Membership Committee be reactiv-  
ated under the chairmanship of  
Thomas C. Points, M.D. This was  
done, and it was observed to Doctor  
Points that there are at least 200  
non-members practicing in the state.  
Moreover, it was suggested that  
teaching hospitals be encouraged to  
use Title XIX funds earned by staff  
physicians on behalf of the hospitals  
to pay OSMA dues for residents.

B. *Office Management Study:*

On recommendation of the com-  
mittee, the Board of Trustees au-  
thorized the Executive Secretary to  
arrange for three staff persons from  
other comparable state associations  
to study OSMA management pro-  
cesses in the light of improving ef-  
ficiency through the development of  
new procedures, utilization of time-  
saving equipment, reorganization of  
responsibilities, and identifying and  
solving manpower problems.

C. *Executive Officer and President  
of the OSMA:*

The idea of employing a full-time  
medical director of the OSMA was  
explored and abandoned. However,  
the committee recommended to the  
Board of Trustees that the OSMA  
President be paid a per diem allow-  
ance and mileage to partially com-  
pensate for his involvement in of-  
ficial activities (see Board of Trus-  
tees report).

D. *Priority Projects:*

The committee recognizes the  
overwhelming expansion of associa-  
tion responsibilities during recent  
years, and believes that the limited  
wherewithal of the OSMA should be  
directed toward priority projects  
rather than diluting resources over  
the complete range of interest areas.  
A detailed analysis of association ac-  
tivities, personnel assignments and  
project costs is underway.

E. *Microfilm Service:*

In the exploration of new sources  
of earned revenue, the committee is  
studying the feasibility of providing  
a microfilm service to assist OSMA



members in the long-range storage of their inactive patient records. A random sample survey indicates an encouraging degree of interest from the profession, but further studies are needed before definitive action can be taken.

F. Building Expansion:

The OSMA headquarters building was constructed in 1956 to accommodate six staff employees and to provide meeting facilities for association Councils and Committees, and the Board of Trustees.

There are presently eight staff personnel, and the volume of activities is estimated to have doubled since the headquarters building was built 12 years ago. The problem of inadequate space exists in the areas of filing and records storage, work-room (mailing) facilities, private office space for staff personnel, and conference rooms for a growing number of physician-meetings.

Thus, the Committee on Planning decided that the OSMA needed to add about 1,900 square feet to bring its headquarters facilities abreast of current needs.

Since this expansion would require a considerable outlay of association savings, and since present OSMA income is insufficient to pay current operating costs and retire a mortgage at the same time, your committee investigated the possibility of leasing space to other compatible professional organizations for a dual purpose: (1) To provide for the cost-sharing of improved printing and other equipment, and (2) To enable the OSMA to partially finance its own space needs through lease income.

The Oklahoma State Dental Association and the Oklahoma County Medical Society were contacted. The dental group declined the invitation to share office facilities because it had recently invested heavily in refurbishing rented space, but the Board of Directors of the Oklahoma County Medical Society voted unanimously to work with the OSMA in developing a building and lease program.

The product of conferences between the Committee on Planning and representatives of the Oklahoma

County Medical Society is attached as Exhibit A. About 1,000 square feet of space is planned for the county society. To illustrate the building expansion plan further, the existing floor plan of the OSMA building is attached as Exhibit B. Exhibit C covers the architect's building cost estimate and the proposed method of financing.

Recommendations:

1. It is recommended that the House of Delegates authorize the expansion of the Oklahoma State Medical Association's headquarters building, including the plan of the Oklahoma County Medical Society space and lease arrangements.
2. Since the cost estimates may vary from actual, and since the Oklahoma County Medical Society's move-in availability is subject to negotiations regarding its present lease, it is recommended that the House of Delegates delegate to the Board of Trustees the authority for carrying out the building program and the timetable.

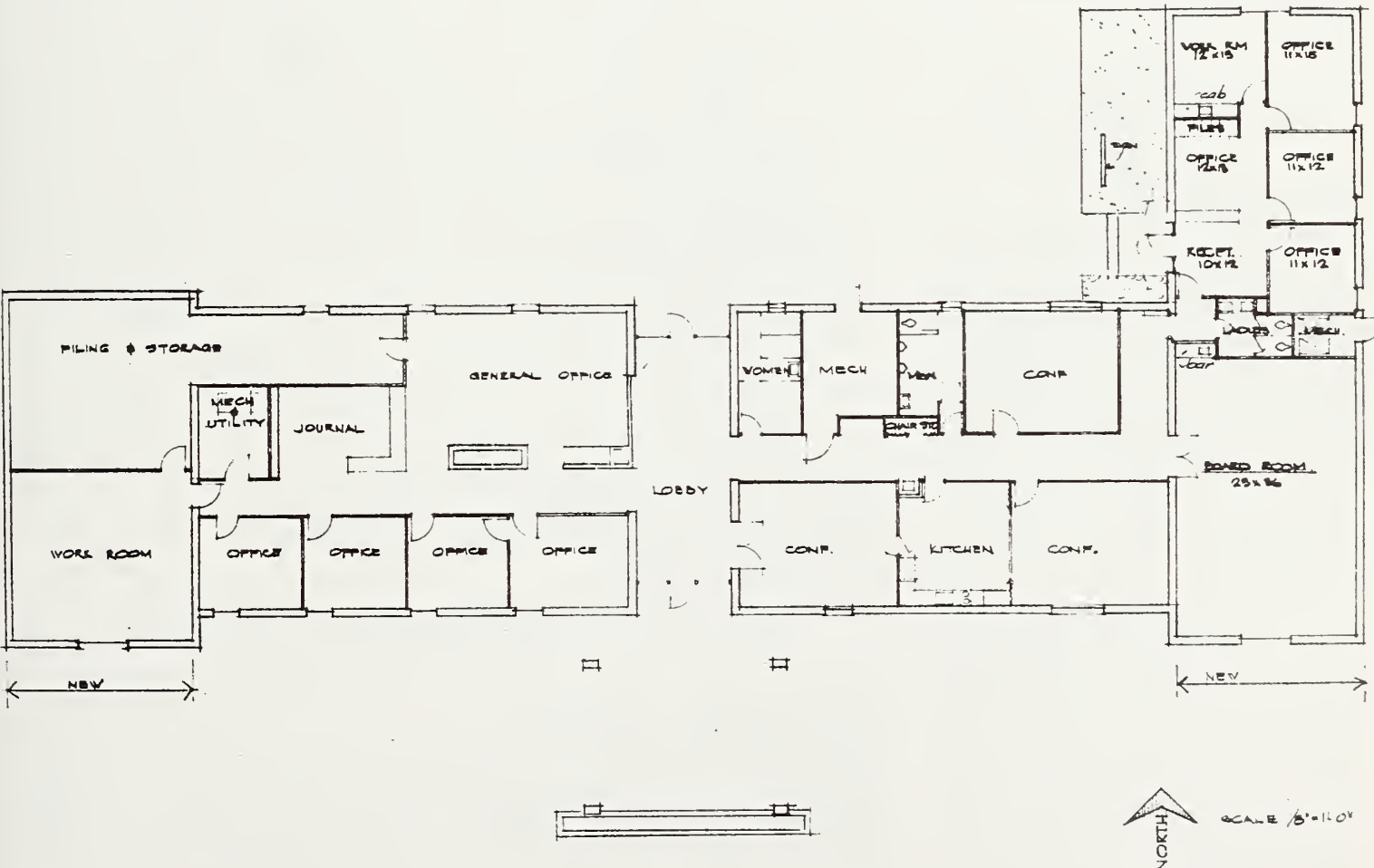


EXHIBIT A—Proposed Addition



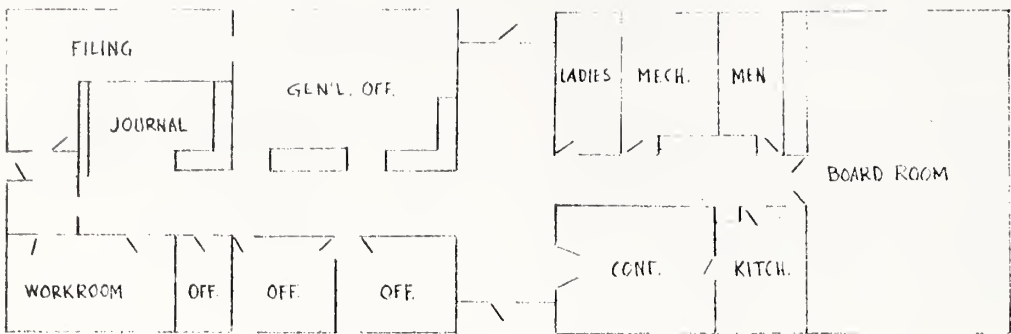


EXHIBIT B—Existing OSMA Building

EXHIBIT C

Estimated Construction	
Cost	\$57,000
OSMA Down Payment*	17,000
<hr/>	
Balance	\$40,000
1st Mortgage: \$40,000	
for 15 years	
@ 7% =	\$4,316.00 Annually
Lease Agree-	
ment—Oklahoma	
County Medical	
Society =	
<hr/>	
4,200.00	
<hr/>	
(\$ 116.00)	

\*Note: It is estimated that an additional \$10,000 will be needed from OSMA savings to furnish and equip the new addition.

Report of the  
SECRETARY-TREASURER  
(APPROVED)

Financial Statement:

The Bylaws of the Oklahoma State Medical Association provide that the Secretary-Treasurer "shall render an annual account of all receipts, expenditures, funds invested and on hand to the Board of Trustees and House of Delegates, and shall open his books and records to such audit or inspection as may be ordered by the Board of Trustees or House of Delegates."

For the past several years, an attempt has been made at the annual meeting to present an estimated financial statement for the information of the House of Delegates, and this has been followed at the close of the fiscal year (May 31st) by mailing all Delegates copies of an official audit report prepared by a certified public accountant.

To prepare this estimated financial statement before the close of the fiscal year necessitates closing the books on March 31st and estimating expense items for the period of April and May. This period includes many

unpredictable matters related to an annual meeting which costs from \$18,000 to \$22,000. Therefore, the attempt to present a year's financial experience based upon ten months' actual operation has been fraught with error and is believed to be of little value. Moreover, a complete accounting at the time of the annual meeting is not required by the Bylaws.

It has been concluded, therefore, that the estimated financial statement should be abandoned in favor of reporting specific income and expense figures for the first ten months' operation. This report follows (the CPA audit report will be mailed to all Delegates at the close of the full fiscal year):

FINANCIAL STATEMENT  
(June 1, 1967 to March 31, 1968)

INCOME	
Dues . . . . .	\$99,731
Miscellaneous . . . . .	997
Interest . . . . .	3,105
Scholarship and Loan (From Dues) . . . . .	8,207
Postgraduate Courses . . . . .	1,258
Journal Advertising, Subscriptions . . . . .	34,977
Directory Advertising and Sales . . . . .	3,846
<hr/>	
Total Income . . . . .	\$152,121
EXPENSES	
Fixed Expense . . . . .	\$78,180*
Depreciation . . . . .	1,750
Councils and Committees . . . . .	6,191
Scholarship and Loan . . . . .	8,207
In-State Travel . . . . .	3,093
Out-of-State Travel . . . . .	10,854**
Health Economic Council . . . . .	1,500
Journal Expense . . . . .	33,614
Directory Expense . . . . .	2,314
<hr/>	
Total Expense . . . . .	\$145,703
<hr/>	
Surplus . . . . .	\$ 6,413

\*Includes \$1,861 for AMA political campaign, authorized to be taken from savings

\*\*Includes \$1,116 for AMPAC Workshop, authorized to be taken from savings

REPLACEMENT, DEPRECIATION AND OPERATIONAL  
RESERVE FUND

Ponca City Building and Loan . . . . .	\$10,000.00
Tulsa Federal Savings and Loan . . . . .	10,000.00
Home Savings and Loan . . . . .	10,000.00
Oklahoma City Federal Savings and Loan . . . . .	10,443.87
Local Federal Savings and Loan . . . . .	12,403.51
Founders National Bank . . . . .	10,000.00
<hr/>	
Total . . . . .	\$62,847.38



The 1968 annual meeting is expected to produce nearly \$21,000 in income, the highest ever achieved, and there is every reason to expect a favorable balance between income and expense. Therefore, a small surplus for the OSMA's total fiscal year operations should be forthcoming.

*Budget:*

The attached budget for the succeeding fiscal year has been prepared as a guide for anticipated financial operations. It has been developed in keeping with known association commitments and continuing program activities, but it does not reflect any new financial outlays which might be voted by the House of Delegates at this annual meeting.

Delegates will note the budgeted item of \$6,000 for the Oklahoma Health Economic Council. At the 1967 annual meeting, the Council on Socio-Economic Activities recommended an appropriation from savings of \$24,000 to finance a three-year public information program based on the findings and recommendations of the Oklahoma Health Economic Task Force (project now called the Oklahoma Health Economic Council). However, through a misunderstanding, the House of Delegates actually appropriated up to \$54,000. The Secretary-Treasurer has noted the revised financing recommendations of the Council on Socio-Economic Activities (see annual report) and the \$6,000 annual appropriation is budgeted within current income rather than from savings.

The Board of Trustees has approved financial participation in the Oklahoma Council for Health Careers (see Council on Professional Education report). Dues are \$3,600 annually, which entitles the OSMA to three members of the Board of Directors. Funds for this commitment are included in the Fixed Expense portion of the budget.

*Recommendations:*

1. It is recommended that the budget for the 1968-69 fiscal year be approved by the House of Delegates as a guide for the incoming administration (subject to adjustments as may be required by the effect of

House of Delegates' actions at the 1968 annual meeting).

2. It is recommended that annual OSMA dues remain at \$75.00.

BUDGET

(For the Fiscal Year June 1, 1968 to May 31, 1969)

INCOME

Membership Dues . . . . .	\$121,500.00
Scholarship and Loan Fund (from dues) . . . . .	8,875.00
Journal Advertising, Subscriptions (from dues) . . . . .	45,000.00
Membership Directory Advertising and Sales . . . . .	3,500.00
Annual Meeting . . . . .	17,000.00
Interest Income . . . . .	3,500.00
Miscellaneous (AMA Commissions) . . . . .	1,200.00
Postgraduate Courses . . . . .	1,300.00

Total Income . . . . . \$201,875.00

EXPENSE

Fixed Expenses . . . . .	\$ 90,000.00
Depreciation . . . . .	2,000.00
Councils and Committees	
Public Policy . . . . .	\$6,000
Insurance . . . . .	1,000
Professional Education . . . . .	4,000
Socio-Economic . . . . .	1,500
Public Health . . . . .	2,000
Prof. and Intervocational . . . . .	1,000
Scholarship and Loan Fund . . . . .	15,500.00
In-State Travel . . . . .	8,875.00
Out-of-State Travel . . . . .	4,500.00
Journal Expense . . . . .	13,000.00
Annual Meeting . . . . .	43,000.00
Health Economic Task Force . . . . .	19,000.00
	6,000.00

Total Expense . . . . . \$201,875.00

Report of the  
PRESIDENT  
(APPROVED)

The work of your Oklahoma State Medical Association during the past 12 months has been marked by a series of crises without parallel in our history. We have been hampered by serious illnesses among your officers; we have been shocked by the passing of one of our beloved staff members, and it took a great effort to overcome his loss in the development of our legislative program at the State Capitol; and we have had difficulties in our relationships with the various "third party" groups.

In spite of all of these difficulties, I am proud to be able to tell you that we have moved forward toward the attainment of a number of our goals. You will be informed in detail today and tomorrow on the progress of our various programs as you receive the various council and committee reports. However, some

comments on the status of a number of our projects are worthy of your attention at this time because of their importance.

Your medical association receives many requests for speakers. These come from lay groups and from medical societies. Last fall we set up a Speakers Bureau staffed by our best orators throughout the state. After a study session put on by the AMA in Oklahoma City, and with the help of a number of pre-written speeches on popular medical topics, we have been able to supply speakers to lay groups on the average of five times per month. Unfortunately, we have been less successful in reaching county societies, and this phase of the program awaits full development. The number of county groups and their multiple locations combined with the time limitations on your officers makes effective coverage of these groups most difficult. However, I feel that it is most important that we continue to attempt to set



up such a doctor-to-doctor public relations program. The officers of our state auxiliary have set us a laudable example this year as they have "stumped the state" by attending local auxiliary meetings.

Concerning the auxiliary, one of our projects has been to bring the doctors' wives into closer relation to our work. We have appointed ladies on many of our committees, and the "Doctors' Wives Day at the Legislature" was a notable success with over 100 ladies in attendance in spite of ice and snow on the highways that day.

An additional project, which is now taking shape and from which we expect great things, is the Oklahoma Health Careers Council. As you know, we are desperately short on all types of paramedical personnel. By 1970 there will be a national need for young people to fill 900,000 new job positions. Under our sponsorship, and with the auxiliary nursing groups, hospital association, and various paramedical groups, we have been able to hire Mr. Ken Hager, formerly of the Oklahoma Hospital Association, to recruit health personnel in some 200 categories all over the state. Funding of this council is being done by the participating groups and from the Oklahoma Regional Medical Program.

During the year we sponsored seven statewide special meetings. Several of these were unusually successful. A Medicine and Religion meeting featuring the Reverend Doctor Paul McCleave of the AMA, and a Nurse-M.D. conference at Fountainhead Lodge, sponsored by Merck Sharp and Dohme, were both well attended.

It is my recommendation that we continue to schedule meetings of this type. However, we must remember that our executive staff is over-taxed to organize such meetings. We should therefore schedule only as many as we can put on without hampering the regular work of the association.

The Oklahoma Health Center project in Oklahoma City came closer

to reality this year. I am proud that your association has been able to help Dean Dennis and the Oklahoma Health Sciences Foundation present to the legislature our dream of a unified plan integrating new University Hospitals and the Medical School with private hospitals, a dental school, and a school of Public Health. These are all to be serviced by the power plants, laundries and parking facilities owned by the citizen-sponsored Oklahoma Health Sciences Foundation. It is estimated that this arrangement by 1975 will give us a 135 million dollar complex at a cost to the state taxpayers of only 40 million dollars.

As called for in our new constitution, your Committee on Planning has been hard at work this year. The proposed expansion of our state headquarters building to allow the Oklahoma County Medical Society to office with us is particularly exciting. I hope you will all become familiar with the details of this proposed expansion.

It is the duty of your officers to attend a number of regional or national meetings on health care. During the past 12 months we participated in the Western Conference on Future Directions in Medical Care—to study the so-called "Partnership in Health Act." We also attended the AMA clinical session and a conference on Health Care for the Poor as well as the annual Socio-Economic Congress in Chicago. From all these meetings and from reading articles, books, magazines and news releases we have gained an increased understanding, and at times, a flash of new insight, concerning the forces and the directions of medical change today.

Here in Oklahoma we are attempting to see that the Medicare program under the Aetna Life and Casualty Company and the Medicare-Medicaid program under the Department of Public Welfare be administered successfully. By utilizing medical insurance review committees on the local level and by having our state review committee function largely as an appellate body, we

have had gratifying success in maintaining a generally harmonious atmosphere throughout the state. Our efforts along this line must be continued and increased as needed. It is to be emphasized that these committees function to handle complaints by our members as well as complaints by the carriers. In this manner every member has recourse if he is confronted with what may seem to him to be an arbitrary decision by Aetna or Welfare.

Change is the keynote of today. We must expect change in all phases of medical practice. Health care, now the third largest industry in the nation, is destined to become number one by 1975. It is unrealistic to believe that outside influences will not take an increasing interest in medicine. Government at all levels, industry, labor, the so-called consumer, the hospital, nursing home and insurance industries are all entering areas of medical life unthought of a few years ago. Our problem as doctors is to try to maintain this country as the foremost medical nation in the world. We must try to preserve those things which have made us great while a most radical revision of American medicine is proceeding. No one will provide us with a crystal globe to tell us what is best to keep and what is best to replace. We must examine each new idea, proposal, suggestion, intrusion, or proposition in the light of what is best for our patients. We exist solely because of and for our patients. Only that which brings better care to our patients is worthwhile.

It is with mixed emotions that I conclude this report to you. The past months have been immensely stimulating and rewarding. I can honestly say that I have received nothing but cooperation from our 2,000 members all over the state. While we have not accomplished all that we had hoped to do, life seldom rewards one with all that one might ask for. For me, to be able to retire to your ranks as a loyal OSMA member is sufficient. I pledge, as I know you do, to help your new president, Doctor Scott Hendren, in every possible way. Under his direction we



can look forward to many new and gratifying accomplishments.

Report of the  
CONSTITUTION AND BYLAWS  
COMMITTEE  
(APPROVED AS AMENDED)  
Committee Members

George H. Garrison, M.D., Oklahoma City, Chairman  
Edward K. Norfleet, M.D., Tulsa  
Paul H. Rempel, M.D., Enid  
Samuel R. Turner, M.D., Tulsa  
John W. Drake, M.D., Oklahoma City

SECTION I  
ACTIVITIES

A. County Constitutions and Bylaws:

The 1966 House of Delegates adopted a vastly improved Constitution and Bylaws for the association. This document reclassified the types of membership, clarified the variable dues structure for membership classes, reorganized the Board of Trustees, spelled out disciplinary procedures and judicial authority, eliminated conflicting and confused terminology which had resulted from years of piecemeal amendments, and generally streamlined the rules governing the affairs of the association and its constituent county medical societies.

To implement the new document throughout the levels of organized medicine, the House of Delegates asked that county medical societies revise or prepare new constitutions and bylaws to be in general conformity with the OSMA. The OSMA Constitution and Bylaws Committee circulated a model constitution and bylaws to county societies to aid them in carrying out this directive.

Despite repeated mailings to county medical society presidents, disappointing progress has been made during the two-year period. Out of a total of 45 county medical societies, only 15 have filed new constitutions and bylaws with the OSMA. Three others have reported progress.

B. Name of Journal:

On petition of the Editorial Board, the OSMA Board of Trustees has approved changing the name of the *Journal of the Oklahoma State Med-*

*ical Association to Oklahoma Medicine.*

The purpose of this suggested amendment to the bylaws is to provide a more informative, distinctive, and simplified title for the association's principal publication. It is pointed out by the Editorial Board that the *Journal* is no longer a provincial publication; its subscribers now include 87 medical schools, 27 state medical associations, and medical centers in 31 foreign countries including England, Australia, India, Peru, Sweden, Italy, Japan, South Africa, Germany and Egypt.

The present name of the *Journal* does not set it apart from other journals presently in circulation, according to the Editorial Board, and a change is desired. However, to relate the proposed new name to the sponsoring organization, it has been suggested that the following subtitle should appear after the name "*Oklahoma Medicine*:" *Official Journal of the Oklahoma State Medical Association.*

SECTION II  
RECOMMENDATIONS:

A.

1. County Constitutions and Bylaws:

The following county or district medical societies have filed new and compatible constitutions and bylaws with the OSMA, and it is hereby recommended that the House of Delegates issue letters to each recognizing their compliance with the 1966 directive:

Atoka-Bryan-Coal	Kingfisher
Caddo	Kiowa-Washita
Comanche-Cotton	LeFlore-Haskell
Custer	Lincoln
Garfield	Murray
Grady	Payne-Pawnee
Hughes-Seminole	Texas-Cimarron
Jackson	Tillman

2. It is further recommended that efforts be renewed during the next organizational year to bring the balance of constituent societies into compliance with the new OSMA Constitution and Bylaws.

3. New Charters:

Garfield and Kingfisher counties dissolved their amalgamated district society last year, with the approval

of the House of Delegates. Both groups have now filed new and approved constitutions and bylaws, and clearance has been granted by the Board of Trustees for them to be chartered as separate constituent societies of the OSMA. Therefore, it is recommended that the House of Delegates approve the re-chartering of these societies, retroactive to May 13, 1967, and that letters of charter be issued over the dual signatures of the President and Secretary-Treasurer in accordance with the bylaws of the OSMA.

B. Name of Journal:

(The House of Delegates disapproved the recommendation to change the name of the *Journal of the Oklahoma State Medical Association.*)

Report of the  
BOARD OF TRUSTEES  
(APPROVED AS AMENDED)  
BOARD ACTIONS

Five meetings of the Board of Trustees have been held since the last annual meeting. This report covers the significant actions of the first four meetings, and actions taken by the Board at its May 16th annual meeting are covered in the accompanying supplemental report.

Reportable actions taken during four called meetings are:

1. The annual audit report, completed at the close of the fiscal year (May 31st, 1967) was approved by the Board and copies were prepared and mailed to the House of Delegates.

2. Since the House of Delegates approved a health economic education program under the auspices of the Health Economic Task Force, the Board revised the budget of available funds in an effort to finance the project out of current income rather than to deplete savings. A total of \$11,000 was shifted from other expense accounts to the health economic activity. The revised budget was mailed to the House of Delegates.

3. An Executive Committee was appointed, based on nominations of the President, as follows: Maxwell A. Johnson, M.D., President and



Chairman; Scott Hendren, M.D., E. H. Shuller, M.D., C. M. Hodgson, M.D., Malcom E. Phelps, M.D., Ennis M. Gullatt, M.D., Harlan Thomas, M.D., and Francis A. Davis, M.D.

4. Presidential appointments to Standing Committees were approved for the Annual Meeting Committee, the Constitution and Bylaws Committee, and the Medical School Liaison Committee.

5. The Board approved the OSMA State Legislative Committee's proposed Licensure Act for Medical Laboratories and Laboratory Personnel on two occasions.

At a subsequent meeting, however, the Board withdrew its support for the bill due to deleterious amendments it suffered before the Interim Legislative Council. The OSMA State Legislative Committee was instructed to prepare an acceptable bill for introduction into the Second Session of the Thirty-First Legislature.

6. The Board instructed the Legislative Committee to prepare and introduce a bill to the State Legislature which would define blood and other human tissues as medical services rather than commodities, thus avoiding the application of the implied warranty doctrine to these services.

7. An educational contribution of \$1,500 was authorized for the use of the Oklahoma Medical Political Action Committee to conduct a statewide citizenship conference.

8. The Board submitted nominations to the Governor for two positions on the State Board of Medical Examiners. Nominee Francis First, M.D., Checotah, was appointed to a position vacated by Glen L. Berkenbile, M.D., and nominee Donald L. Brawner, M.D., was reappointed for another term on the Board.

9. Dues were waived for 17 Oklahoma physicians on the basis of undue financial hardship.

10. The Board endorsed the Jane Brooks School for the Deaf, Chickasha, at a time when its survival was threatened by its disassociation from the Oklahoma College of Liberal Arts.

11. A policy statement was adopted stating that exhibits at OSMA meetings or advertisements in OSMA publications by paramedical groups must first be approved by the association's Council on Professional and Intervocational Relations.

12. A policy statement concerning the affiliation of podiatrists with hospitals was adopted. This will be reported by the Council on Professional and Intervocational Relations.

13. Fifty-Year Pins were awarded by the Board to:

M. V. Stanley, M.D., Tulsa  
George H. Miller, M.D., Tulsa  
F. P. Baker, M.D., Tahleah

14. To fill a vacancy created by a change of residence, the Board appointed William C. McCurdy, M.D., Purcell, to replace Edward K. Norfleet, M.D., formerly of Norman, as Alternate Trustee from District VII. Also, a vacancy in the Alternate Trustee position for District XI was created when Alternate Trustee Henry D. Wolfe, M.D., Hugo, automatically replaced Robert L. Loftin, M.D., Broken Bow, as Trustee when he left the state. Alfred T. Baker, M.D., Durant, was appointed as Alternate Trustee replacing Doctor Wolfe.

15. The Board granted tentative recognition, pending Delegates' approval, of the Garfield County Medical Society and the Kingfisher County Medical Society, both of whom applied for separate charters following the dissolution of their amalgamated society.

16. The Board heard, without taking official action at the time, an explanation of the Usual, Customary and Reasonable fee concept being developed by Oklahoma Blue Shield in an effort to offer more comprehensive benefits to both physicians and subscribers.

17. At the request of the Editorial Board, the Board approved a proposed amendment to the bylaws which would change the name of *The Journal of the Oklahoma State Medical Association* to *Oklahoma Medicine*.

18. On recommendation of the Pottawatomie County Medical Society, the Board of Trustees ap-

proved, pending House of Delegates action, a Certificate of Accomplishment for Edward K. Norfleet, M.D., Tulsa, who has served the association for 15 years in the capacity of a Delegate, Trustee or Alternate Trustee.

19. The Board received criticism that the State Board of Medical Examiners is permitting foreign medical graduates to practice in state institutions before they possess Certificates for Limited Institutional Practice. This matter was investigated by a committee of Trustees, and it was revealed that foreign physicians must be granted a reasonable length of time after employment in order to take the necessary examination, apply for and/or receive American citizenship, etc. Moreover, the Board of Medical Examiners must have time to investigate the candidate. Thus, the Board of Medical Examiners is allowing foreign physicians to be employed prior to licensure, but is requiring an affidavit from the hospital administrator to the effect that the physician did not practice medicine before receiving a Certificate for Limited Institutional Practice.

20. The Board also asked a committee to investigate the possibility that Oklahoma's reciprocal licensing regulations might be so restrictive as to encourage an effort by the Federal government to assume control of medical licensure. The committee reported that Oklahoma has optimum reciprocity standards which insure the quality of state medical practice and permit Oklahoma licensees to obtain reciprocal privileges on a nationwide basis.

21. The Oklahoma University Medical Center's long-range development program, including implementing legislative proposals, was endorsed unanimously by the Board of Trustees after hearing a detailed report from Dean James L. Dennis, M.D., and Robert C. Hardy, Director of the Oklahoma Health Sciences Foundation.

22. The Board reaffirmed its endorsement of the Aetna Life and Casualty Company as carrier for



Part B of the Medicare Law in Oklahoma.

23. On recommendation of the State Legislative Committee, the Board appointed a study committee to analyze the need and practicality of the OSMA establishing a survey program to help state physicians improve quality control in clinic laboratories.

24. On recommendation of the association's Committee on Planning, the Board voted to restrict uncommitted OSMA savings for capital improvements until such time as a feasibility study for building expansion is completed and action taken. Also, the Board voted to change the name of the savings account to "Replacement, Depreciation and Operational Reserve Fund."

25. On recommendation of the Committee on Planning, the Board approved an office management study for the OSMA headquarters.

26. On recommendation of the Committee on Planning, the Board approved the principle of routinely paying the association President a per diem and mileage allowance for in-state travel. The amount of the per diem, and the effective date of the policy are passed on to the House of Delegates for action.

27. The Board voted to participate in the newly-formed Oklahoma County for Health Careers, and appropriated \$3,600 for annual dues.

#### MEMBERSHIP

Active Members .....	1,865
Active Dues-Exempt Members ..	47
Applications Pending .....	62
Life Members .....	127
Affiliate Members .....	7
Junior Members .....	51
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Total .....	2,159

#### RECOMMENDATIONS:

1. It is requested that the Board of Trustees actions contained in this report be affirmed by the House of Delegates. More specific recommendations follow:

2. It is recommended that the House of Delegates approve a Certificate of Accomplishment on behalf of Edward K. Norfleet, M.D., Tulsa.

3. Regarding the existing policy to provide for the reimbursement of

in-state travel expense for OSMA Presidents, it is recommended that the President be urged to take advantage of this policy.

It is further recommended, that beginning with the 1968-69 organizational year, the President of the association be provided with an annual honorarium of \$1,000, in addition to the regular expense and mileage allowance.

4. It is recommended that the following application for Life Memberships be approved by the House of Delegates:

Forrest P. Baker, M.D., Talihina  
Marvin D. Henley, M.D., Tulsa  
Jacob R. Hinshaw, M.D., Norman

Wann Langston, M.D., Oklahoma City

Earl D. McBride, M.D., Oklahoma City

Bert E. Mulvey, M.D., Oklahoma City

Clarence B. Sullivan, M.D., Carnegie

Eugene G. Wolfe, M.D., Tulsa

#### BOARD OF TRUSTEES SUPPLEMENTAL REPORT (APPROVED AS AMENDED)

In addition to the Board of Trustees' report which summarizes actions of the preceding organizational year, the following items resulted from the Annual Meeting of the Board conducted on May 16th, 1968, in the Skirvin Hotel:

1. Doctor Samuel R. Turner was elected to a one-year term as Chairman of the Board, and Doctor C. Riley Strong was elected to a one-year term as Vice-Chairman.

2. Officers of the O.U. Chapter of the Student AMA appeared before the Board and requested OSMA consideration for providing summer employment to medical students through physicians' offices and clinics. The Board is generally favorable toward this partnership, and it authorized the President of the OSMA to appoint a special committee to study the feasibility of the project and to formulate recommendations.

3. The Board of Trustees reviewed all council and committee reports to be presented to the House of Delegates.

Regarding a report of the Council on Socio-Economic Activities, the Board takes exception to Recommendations 1 through 5 on pages 11 and 12. Therefore, the Board recommends that the House of Delegates delete these specific recommendations in lieu of a general statement reiterating our support for the AMA Code of Ethics.

In addition, the Board of Trustees is not satisfied with "Exhibit A" of the Prepaid Medical Care Committee report, a part of the Council on Socio-Economic Activities, and recommends that the House of Delegates decline approval of "Exhibit A" in favor of developing a more suitable mechanism for the review of insurance claims.

4. The OSMA Bylaws provide that resolutions to be considered by the House of Delegates must be received in the OSMA Executive Office 30 days prior to the meeting, unless such late resolutions are accepted by the Board of Trustees. The Board received Resolutions 3, 4, and 5, as late resolutions, and herewith transmits them for the consideration of the House of Delegates.

5. In recognition of the death of Mr. N. D. Helland, formerly President of Oklahoma Blue Cross-Blue Shield, the Board of Trustees recommends that the House of Delegates authorize the OSMA Executive Committee to issue a resolution of commendation and sympathy to Mr. Helland's family.

6. The Board of Trustees has studied the feasibility of developing a check-sample program for improved laboratory performance (Exhibit A) and transmits this proposal to the House of Delegates for its action. If approved by the House of Delegates, the President of the OSMA should be instructed to appoint a committee to develop an operational and economical aspects of its implementation.

7. The Board of Trustees appointed Harris D. Riley, M.D., Oklahoma City, to a three year term on the Editorial Board of the OSMA Journal.

8. For one appointive position on the State Health Department's Hos-



pital Planning Advisory Council, the Board nominated C. E. Lively, M.D., McAlester, Carl Guild, M.D., Bartlesville, and Worth M. Gross, M.D., Tulsa.

9. The Board of Trustees authorized the appointment of the following persons to serve on the Board of Directors of the Oklahoma Medical Political Action Committee:

*Congressional District 1:*

Hugh Perry, Jr., M.D., Tulsa  
Stephen J. Adelson, M.D., Tulsa  
A. M. Vammen, M.D., Tulsa  
Mrs. Samuel Turner, Tulsa

*Congressional District 2:*

Elvin Amen, M.D., Bartlesville  
Camp S. Huntington, M.D., Bartlesville

Tom Gafford, M.D., Muskogee  
David Carson, M.D., Fairland

*Congressional District 3:*

C. S. Cunningham, M.D., Poteau  
Frank Clark, M.D., Ardmore  
E. H. Shuller, M.D., McAlester  
Orange M. Welborn, M.D., Ada

*Congressional District 4:*

W. C. McCurdy, M.D., Purcell  
James W. McDoniel, M.D., Chickasha  
Paul Vann, M.D., Lawton  
C. L. Tefertiller, M.D., Altus

*Congressional District 5:*

Rex Kenyon, M.D., Oklahoma City  
Johnny Blue, M.D., Oklahoma City  
Neil Woodward, M.D., Oklahoma City

Don Resler, M.D., Oklahoma City

*Congressional District 6:*

Ed Calhoon, M.D., Beaver  
Jack Fetzer, M.D., Woodward  
Richard Burgtorf, M.D., Shattuck  
Avery Wight, M.D., Enid

*Auxiliary Appointees:*

Mrs. J. R. Stacy, Oklahoma City  
Mrs. Everette Cooke, Oklahoma City

10. The Board of Trustees approved Life Membership applications from the Tulsa County Medical Society on behalf of Maurice J. Searle, M.D., and Iron H. Nelson, M.D. These are transmitted to the House of Delegates for final approval.

11. On petition of the McCurtain County Medical Society, the Board has approved an Affiliate Member-

ship for Robert L. Loftin, M.D., formerly of Broken Bow and now of Saginaw, Michigan. This is transmitted to the House for final approval.

12. The Dwight F. Whelan Memorial Fund now contains \$10,819.00 held in trust for the education of Mr. Whelan's three children. At the May 16th meeting of the Board of Trustees, the Board committed the OSMA to make a contribution of \$1,000 to this fund. In view of Mr. Whelan's remarkable contributions to the affairs of the OSMA, as well as his personal dedication to the medical profession, all members of OSMA are encouraged to minimize this tragedy by making personal contributions to the fund.

13. To correct what is felt to be a misnomer in the OSMA Bylaws, the Board of Trustees recommends that the House of Delegates amend the bylaws by changing the words "Executive Secretary" to "Executive Director" in all sections where they might appear.

EXHIBIT A

Subject: Committee Report of Special Committee to Consider An OSMA Sponsored Proficiency Check Program for Laboratory Facilities in Physicians' Offices and Clinics

To: The Board of Trustees, Oklahoma State Medical Association, Samuel R. Turner, M.D., Chairman  
The committee met on March 10th, 1968, in Bartlesville, Oklahoma, at 1:00 p.m. Members present were Avery Wight, M.D., H. E. Denyer, M.D., and Raymond F. Hain, M.D., adviser. Jess D. Green, M.D., was present as a guest. Another member of the committee, Francis First, M.D., was absent.

After a thorough discussion, it was felt advisable that a "voluntary proficiency check program" should and could be sponsored jointly by the Oklahoma State Medical Association and the College of American Pathologists, utilizing the voluntary check program of the CAP now operating in small hospitals.

The Oklahoma State Health Department should and could be invited to help finance, participate in

educational activity and promotion of this pursuit.

It is proposed that the OSMA function as a clearing hours for enrollment of the eligible laboratory facilities in the program and promote and publicize the program to its members and to the public.

It is the intent of this recommendation that the program be self sustaining and that the \$50.00 per laboratory enrollment charge be supplemented by an additional charge to reimburse the association for the administrative expense.

It is further the intent of this recommendation that the results of these studies be reviewed by a new or existing council or committee of the OSMA to make annual recommendations for its change or improvement.

The entire recommendation of this committee is dependent upon concurrence and cooperation of the CAP program which has been informally solicited.

Respectfully submitted,  
S/ H. E. DENYER, M.D.,  
Chairman

Report of the  
COUNCIL ON PROFESSIONAL AND  
INTERVOCATIONAL RELATIONS  
(APPROVED AS AMENDED)  
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**SECTION I**

**THE COUNCIL**

The Council on Professional and Intervocational Relations for the past year has continued to broaden, through its subordinate committees, its liaison activities with other health and paramedical organizations. We have seen increased activities in the fields concerned with medicine and religion, medical-legal relations and nursing. The council feels specific

committees in each of the areas are required to continue to develop a constant exchange of information and ideas. These committees also give the association an agency by which minor problem areas between and among medical groups can be prevented from becoming major problems.

During the past year the council also, at the request of the OSMA Board of Trustees, developed a recommended policy statement on podiatry for the Board. The request for a statement was precipitated by two incidents which occurred at the association's 1967 Annual Meeting in Tulsa. First, the Oklahoma Podiatry Association was permitted to have an exhibit concerning the professional training and competence of podiatrists. This exhibit provoked criticism by some medical doctors. Secondly, the OSMA House of Delegates recorded opposition to the inclusion of podiatry services under Medicare, and this action was subsequently criticized by podiatrists.

In answer to the Board's request the Council on Professional and Intervocational Relations met on September 24th, 1967, and adopted the following "Position on Podiatry":

"The Oklahoma State Medical Association reaffirms the stand of the American Medical Association that the practice of podiatry is a valid pursuit and a helpmate to the practice of surgery.

"As an allied health profession it is to be aided and helped in its limited field of practice. Cooperation between Doctors of Medicine and podiatrists is to be encouraged in the care of the patient.

"In such instances of hospital care for a patient, the OSMA affirms and adopts the policy of the Joint Commission on Accreditation of Hospitals:

" 'A hospital staff may vote a podiatrist privileges in his specialty. Each hospital staff must evaluate the podiatrist who applies for hospital privileges and set up qualifications, rules and regulations. Granting of privileges to a qualified podiatrist will not cause the hospital

to be penalized by the Joint Commission.

" 'Podiatrists must be under the jurisdiction of the department of surgery. A physician must be in attendance when the podiatrist is performing surgery in the hospital on an inpatient. Where minor outpatient podiatry is performed it will be done under the supervision of the surgical department, though actual attendance is not required. The podiatrist is in the nature of a technologist functioning under the surveillance and supervision of a physician.

" 'The podiatrist is not qualified to write the history or physical examination nor check the heart and lungs before an anesthetic. This applies also to the prescribing of drugs, both pre-operatively and post-operatively on inpatients or outpatients. These functions can only be performed by a physician on the staff or with privileges in the hospital in question. The podiatric patient must be admitted to the hospital under the physician's name.

" 'It is in no way obligatory that a podiatrist be given privileges. It is up to each individual hospital staff to evaluate the hospital's needs, the individual's qualifications and competence, and then vote on the matter with recommendations to its Board of Trustees. The Board of Trustees of any hospital before giving approval to such election, should make sure that the hospital's by-laws, rules and regulations spell out all facts and privileges.

" 'It is to be remembered that a podiatrist can never be a member of the medical staff—he is not an M.D.'

"The Oklahoma State Medical Association affirms and adopts the following policy statement from the American Academy of Orthopaedic Surgeons:

" '1. The extent of podiatry service should be determined at the local level and vary with the size, type, staff organization of, and service rendered by the hospital.

" '2. These services should logically be provided in the Outpatient Departments of those hospitals in



which podiatrists are permitted to practice and be confined within the scope of the practice of podiatry as authorized by the statutes of the state.

"3. The services of podiatrists in hospitals are in the best interest of the public only when rendered under medical supervision and should be confined to the Outpatient Department.

"4. The services of podiatrists in hospitals must be rendered under one of the existing Departments or Sections which has been charged with the supervision of podiatry services. Provision of podiatry services in the hospital does not confer on podiatrists the privilege of admitting patients to the hospital.

"5. In those hospitals where a podiatrist is permitted to perform surgery as a technician, it is recommended that he be under the direct supervision of a physician. By supervision, it is meant that during the operation, a staff surgeon must be present in the operating room, gowned and scrubbed, as the responsible person."

After adopting the above "Policy on Podiatry" the council also recommended that, "booths at the annual meeting requested by paramedical personnel should be reviewed by the Council on Professional and Intervocational Relations before acceptance," and that "the Editorial Board of the Journal be given notice that the statement regarding exhibits is on record in regard to professional listings (in the OSMA JOURNAL)."

The above suggested "Policy on Podiatry" was accepted by the OSMA Board of Trustees during its meeting on October 8th, 1967 without change.

#### *Recommendation:*

It is the recommendation of your council that the Policy on Podiatry, as accepted by the council and the Board of Trustees, be endorsed by the OSMA House of Delegates.

## SECTION II COMMITTEE ON CHIROPRACTIC, CULTS AND QUACKERY

The council, through the Committee on Chiropractic, Cults and Quackery, has continued to compile a vast document file on the practice of chiropractic in this state. The judicious use of this information by the OSMA Legislative Committee and the association's lobbyists resulted in the "killing" of two bills introduced by the chiropractic association. House Bill 851 provided that not less than one member of the State Board of Health should be a licensed chiropractor. House Bill 852 would have prohibited the exclusion of chiropractors from certain public programs.

Unfortunately, even with the extensive use made of the association's chiropractic, cults and quackery files, too few legislators have been informed of the true nature and extent of quacks and quackery. To inform and spread the word seems a most vital function of the Committee on Chiropractic, Cults and Quackery.

#### *Recommendation:*

It is recommended that the activities of the Committee on Chiropractic, Cults and Quackery be extended and broadened and that liaison with other interested health groups for a program of education for the press, the legislators and the Oklahoma public is sought. It is further recommended that the committee and the Council on Professional and Intervocational Relations study the advisability and possibility of seeking legislation for the correction for the many abuses in the areas of cults and quackery.

## SECTION III COMMITTEE ON OSTEOPATHY

The Committee on Osteopathy, in response to a recommendation made by the House of Delegates at its Tulsa meeting in 1967, has continued to exist with a purpose of studying the problems concerned with clarification of the OSMA policy on osteopathy and clarification of the guidelines for implementation of this policy.

The policy referred to was one enacted by the OSMA House of Delegates during its 1965 meeting. At that time it was pointed out that the American Medical Association had changed its views toward osteopathy and had developed a new policy statement in which it said that, "It shall not be considered in itself unethical for members of the AMA to associate professionally and on a voluntary basis with doctors of osteopathy who base their practice on the same scientific and ethical principles as doctors of medicine; and it is the prerogative and obligation of each constituent medical association to implement this policy on a state and local basis."

In response to this change of policy the OSMA House of Delegates established a method whereby those osteopaths in Oklahoma who were practicing scientific medicine could be recognized through the county medical societies. Medical doctors could then ethically enter into voluntary professional relationships with such recognized osteopaths.

The policy statement then set out certain criteria for the purpose of evaluating individual doctors of osteopathy for recognition. During the 1966 meeting of the House of Delegates, these criteria were further explained and a guideline for implementation of the OSMA policy on osteopathy was enacted. Again, it was restated that the, "final authority on the implementation of any professional association with doctors of osteopathy rests with the local medical society."

The 1965 report of the Committee on Osteopathy to the House of Delegates contains the following two paragraphs:

"Efforts are being made at the present time (1965) by the Oklahoma Osteopathic Association to gain entrance to the Postgraduate Education Program offered through the University of Oklahoma School of Medicine, a problem which is being considered by the OU Board of Regents. The committee does not believe that a degree and licensure in the separate profession of osteopathy represent in themselves appropriate



qualifications for postgraduate study in a different health discipline.

"Organized osteopathy's insistence upon remaining classified in the gray area of pseudo-scientific identity is not a matter to be resolved by the OU School of Medicine; it is an internal problem within osteopathy itself and the osteopaths must decide among themselves whether or not they wish to support the principles of medical science before seeking special privileges in another educational discipline."

The association's osteopathic recognition program gave the Medical Center a logical answer to this problem. Provision was made whereby recognized osteopaths could attend the University's postgraduate courses.

In February of this year, 1968, this problem again came to the fore. In a letter to Dean James L. Dennis, M.D., of the Medical Center, Kelly M. West, M.D., Chairman of the Department of Continuing Education, suggested that the Medical Center re-examine its policies relating to the participation of osteopathic physicians in postgraduate activities.

The letter pointed out that the OSMA was attempting to implement the osteopathic recognition program on the local level and that some county medical societies had chosen not to examine the credentials of the osteopaths in their areas. This left the osteopath with no mechanism by which he could be "approved" so that he would be eligible for certain kinds of recognition, i.e., invitation to attend the Medical Center postgraduate courses. This, in turn, was again creating pressure on the medical school to liberalize its policy concerning the attendance of osteopaths at such courses.

In his letter, Doctor West posed the following question: "Would . . . OSMA have any objection to a liberalization of policies relating to postgraduate courses sponsored by the OU Medical Center, which were held in the OU Medical Center?"

On April 23rd, 1968, the Committee on Osteopathy met to consider this question.

During that meeting the committee recognized that the OSMA's policy on osteopathy was in need of reconsideration and that, further, the osteopathic recognition program was not completely workable. The committee did, however, arrive at a series of three recommendations to be submitted to the OSMA House of Delegates.

#### *Recommendations:*

1. In view of the limited amount of time your committee has had to consider the current problem with osteopathy, it is recommended that the 1965 policy statement on osteopathy be reiterated as the policy of the association; and that the Committee on Osteopathy be instructed to review and revise the 1966 guidelines for implementation of the osteopathic recognition program.

2. It is recommended that the association go on record as not objecting to the medical school's postgraduate education department considering several alternative solutions to its osteopathic problem so long as these attempted solutions are kept on an admitted experimental basis for a limited period of time; and further, that during this time of experimentation it will not be unethical for M.D.s to participate in such programs with osteopaths so long as both professions recognize that this participation is on a limited and experimental basis.

3. It is recommended that this committee be continued on an indefinite basis and, further, that it be instructed to study, in conjunction with the State Board of Medical Examiners, the possibility of a long term solution to the problem of the separate standards of licensure and the parallelism of medical practice that exists in this state today.

#### *SECTION IV*

##### *MEDICAL-LEGAL RELATIONS COMMITTEE*

The OSMA Medical-Legal Relations Committee has held six meetings with its Oklahoma Bar Association counterpart. These meetings have resulted in the planning and implementation of a "Medicolegal Institute" to be held at Fountainhead State Lodge on July 11th-13th, 1968.

All Oklahoma physicians and attorneys will be invited to attend this institute.

The purpose of the institute will be threefold: first, it will promote a closer "personal" relationship between the legal and medical professions; second, it will serve as a study in malpractice prevention for physicians and it will aid attorneys in advising their physician clients; third, it will give both professions an opportunity to enter into a meaningful dialogue on the problem areas between the two professions. This last purpose can be seen in the portions of the institute program dealing with the payment of medical witnesses, limitations of diagnostic aids, payment for and making of medical reports, and the implementation of the interprofessional code.

The institute will also be used as a "platform" by the medical-legal relations committees of both associations to encourage physician-attorney joint meetings on the local level. It is felt by all members of the joint committee that a more personal relationship on the local level must be accomplished before the interprofessional code can be properly implemented in the state. Several portions of the institute program will be used to promote such local joint meetings on both a professional and social level.

Since the Medicolegal Institute is being jointly sponsored by two separate associations, the committee felt that it would be necessary for the institute to be self-sustaining. Therefore, it was decided to charge a registration fee of \$25.00 per person. Any profit remaining after all of the institute's bills are paid will go into a special fund for future joint medical-legal programs.

#### *Recommendation:*

Realizing the importance of a continued liaison with the Oklahoma Bar Association in studying the mutual problems of the medical and legal professions, it is recommended that the Committee on Medical-Legal Relations be continued on an indefinite basis and that it continue to seek the further implementation of the



"Medical - Legal Interprofessional Code."

# SECTION V COMMITTEE ON MEDICINE AND RELIGION

On February 2nd-3rd, 1968, the committee, in cooperation with the Oklahoma Council of Churches, sponsored a "Conference for Clergy and Physician" in the St. Francis Center for Christian Renewal, Oklahoma City. The conference took for its theme "The Whole Man In A World of Changing Morals."

Approximately 125 physicians and clergymen attended the meeting to hear Reverend Doctor Paul B. McCleave, Director of the Department of Medicine and Religion for the American Medical Association, and David Belgum, Ph.D., Associate Professor of Religion in the University of Iowa's School of Religion and College of Medicine. These men, along with a panel of Oklahoma physicians and clergy, discussed such topics as "Modern Medicine and Its Paradox," "Making the Whole Man Whole Again," and "Dying with Dignity."

The comments from physicians and clergymen made during and following the meeting dramatically pointed out the renewed interest in the field of medicine and religion and the need for the two professions to continue a close liaison.

## Recommendation:

In view of the response to the above mentioned conference it is recommended that the Committee on Medicine and Religion be continued and that it seek to implement an appropriate statewide program on medicine and religion.

# SECTION VI COMMITTEE ON NURSING

Liaison with the Oklahoma Nurses Association proved to be extremely fruitful this year. The OSMA Committee on Nursing in cooperation with the state nurses association developed and executed a three-day meeting, February 15th-17th, 1968, on "Nurse-Physician Collaboration Toward Improved Patient Care."

Fifty physicians and 50 nurses were invited to participate in this

program which was designed to give the two health professions an opportunity to hold open and frank discussions on their mutual problems and on problems of one profession that affect the efficiency of the other. (The conference was attended by 45 physicians, 50 nurses and 19 other guests.)

The most beneficial portion of this conference appeared to be the two group discussions held on Friday. The conference participants were divided into small groups to discuss the questions: 1) What are some of the more important needs of patients in relation to medical and nursing care? 2) How should the medical and nursing needs of patients be determined and how can they best be met? 3) What are some of the factors that promote or inhibit optimal patient care by nurses and physicians? 4) What are some specific suggestions for improving medical and nursing services to patients? 5) What actions or changes would be necessary to implement the suggestions?

The discussion groups did not feel themselves limited to these topics and in their final reports, given Saturday morning, it was revealed that a much wider range of topics was discussed. Many of the topics were discussed in great detail and the reports substantiated the fact that many of the conference participants had put in a great deal of time preparing for the discussions.

The entire conference was underwritten by a grant from the Merck, Sharpe and Dohme Pharmaceutical Company.

## Recommendations:

1. It is recommended that the Committee on Nursing be continued on an indefinite basis and that it continue liaison activities exemplified by the above mentioned conference. Further, it is recommended, that the committee implement study for an appropriate statewide program in the area of nurse-physician communications for optimal patient care.

2. It is further recommended that an M.D. member of this committee be appointed as the OSMA represen-

tative to the Advisory Council of the State Board of Nursing Examiners.

# SECTION VII

## COMMITTEE ON PHARMACY

The Committee on Pharmacy's activities during the past year centered on the ultimate passage into law of Senate Bill 346. This bill provides that, "the State Board of Health, upon the recommendation of the State Commissioner of Health and with the advice of the State Hospital Advisory Council and with the advice of the State Board of Pharmacy, shall adopt such rules, regulations and standards as it deems to be in the public interest with respect to the storage and dispensing of drugs and medications for hospital patients; the State Board of Pharmacy shall be empowered to inspect drug facilities in licensed hospitals and shall report violations of applicable statutes and regulations to the State Board of Health for action and reply."

This bill was sponsored and initiated by the OSMA in cooperation with the Oklahoma Hospital Association, the State Board of Pharmacy and the State Board of Health. It was necessitated by a 1965 Attorney General's opinion which stated that the State Board of Pharmacy was authorized to regulate hospital drug rooms and pharmacies. In March, 1966, the State Board of Pharmacy issued regulations, in compliance with the Attorney General's opinion, governing drug control and dispensing in hospitals.

The OSMA Committee on Pharmacy studied the "hospital-pharmacy regulations" as issued and found that they would impose undue hardship on most hospitals, that such regulations represented a departure from the traditional role of hospitals and their necessary activities for functioning as a hospital, and that the regulations were completely unworkable.

In compliance with a direction from the OSMA House of Delegates in May, 1966, legislative action was sought by the association and Senate Bill 346 was introduced by Senators McGraw and Smith. During the 1967 session of the Oklahoma Legislature



several amendments were negotiated which met with the approval of the OSMA, the Oklahoma Hospital Association, the Oklahoma Pharmaceutical Association, the Oklahoma State Board of Pharmacy and the Oklahoma State Board of Health. These negotiations took some time, however, and resulted in the bill being carried over from the 1967 to the 1968 legislative session. With the start of the '68 session the difficulties had been "ironed out" and the bill passed both houses of the legislature with little difficulty. On Thursday, March 28th, 1968, Governor Dewey Bartlett signed Senate Bill 346 into law.

#### *Recommendation:*

It is recommended that the activities of the OSMA Committee on Pharmacy be continued on an indefinite basis and that it continue its general liaison efforts with the profession of pharmacy.

#### Report of the COUNCIL ON PUBLIC POLICY (APPROVED)

##### *Council Members*

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F. David Kalbfleisch, M.D., Lawton  
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E. C. Mohler, M.D. (and Mrs.),  
Ponca City  
Clinton Gallaher, M.D. (and Mrs.),  
Shawnee  
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J. F. York, M.D. (and Mrs.), Madill

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Richard Stansberry, M.D., Oklahoma  
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C. Riley Strong, M.D., El Reno  
Thomas C. Points, M.D., Oklahoma  
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Kieffer D. Davis, M.D., Bartlesville  
Harlan Thomas, M.D., Tulsa  
Mrs. Harlan Thomas, Tulsa

#### SECTION I

##### *PUBLIC RELATIONS COMMITTEE*

Public relations activities during the past year have been coordinated by James B. Eskridge, III, M.D., a member of the council.

Activities have been as follows:

1. The association's four-year-old weekly health column, "A Message From Your Doctor," continues to be carried by about 40 state newspapers each week. If the newspaper space commanded by the column was purchased as advertising, the cost would be about \$25,000 annually. This column is produced solely by the OSMA staff.

2. The association's monthly newsletter, THE OSMA NEWS, has been expanded to six pages (with two pages of advertising) and is now being mailed to the physicians' homes. The expansion gives more editorial space for news of interest to Oklahoma physicians. The additional page of paid advertising allows the

publication of a larger newsletter on a smaller appropriation from the association budget. The change in mailing from the physician's office to his home was made to facilitate the dissemination of information to the physician's family. It was found that many physician's wives were interested in the association's legislative, insurance and educational programs.

3. Each month a series of public service radio announcements are distributed to all Oklahoma radio stations. These announcements deal with current health topics and health reminders of interest to the general public.

4. Special feature articles on health or related subjects are produced and mailed periodically to all state newspapers.

5. In cooperation with the OSMA Legislative Committee's "Legislative Doctor of the Day" program, the executive staff produces a story for the physician's hometown newspaper. These stories are released the week prior to his day of service. The stories serve a twofold purpose by (1) informing the doctor's patients that he will be out of his office on a certain day and (2) creating a good public relations image for the association.

6. The OSMA participated in the promotion of National Community Health Week, in cooperation with the AMA. This promotion consisted of special radio spot announcements, television spot announcements, newspaper feature articles, news stories, newspaper ads and a special proclamation from the Governor proclaiming Community Health Week in Oklahoma. During the week, physician television appearances were arranged for all major stations in Oklahoma City and Tulsa.

7. Special projects have been undertaken, such as press conferences, reaction stories to news events and working with newspaper writers and reporters in conceiving, researching and placing medical stories in major newspapers.

8. In September, 1967, the OSMA "Speakers Bureau" was formed with 33 physician-speakers partici-



pating. A brochure offering the services of the bureau was published and distributed to all major Oklahoma service clubs (Kiwanis, Rotary, Lions, etc.). Since the first distribution of the brochure in November some 30 speaking engagements have been filled by Oklahoma physicians. The OSMA staff is continuing to promote the existence of the bureau and feels that its utilization by the service clubs will continue to improve.

The formation of the bureau was preceded by a "Speakers Clinic" conducted by the AMA's Speakers Clinic team made up of Mr. Edward A. Uzemack, Director of the Officers Services Department of the AMA, Mr. Mortimer T. Enright, Coordinator of the AMA Speakers Program, Mr. Richard M. Dumont, Director of the AMA's Department of Radio, Television and Motion Pictures, and Robert A. Lang, Ph.D., Executive Secretary of the Cleveland Academy of Medicine. Approximately 20 physicians participated in the program utilizing the latest in electronic teaching techniques. During the two-day meeting each participant gave a talk that was video tape recorded. When this was "played back" the speaker could both hear and see his presentation and was, therefore, enabled to judge himself.

#### *Recommendation:*

It is recommended that the Council on Public Policy, in cooperation with the Medical-Legal Relations Committee of the Council on Professional and Intervocational Relations, study the feasibility of publishing a booklet on the medical laws of Oklahoma as they affect the physician. The booklet should be a cross-indexed reference to answer legal questions concerning medical practice that a physician might have.

### **SECTION II**

#### **MEDICAL HERITAGE COMMITTEE**

The Medical Heritage Committee has been hampered in its activity because of a lack of space available for storage, separation and display of articles, equipment, manuscripts, etc., pertaining to early Oklahoma medicine. There is an abundance of

material which has been offered to the members of the committee when proper housing becomes available.

At present the committee is reasonably assured of adequate space in a most favorable location in the new library building of the medical center complex in Oklahoma City when that facility is completed some two years hence. There is a fair probability that we may have, in the next two or three months, an area allocated to us for storage, separation and arrangement of materials which will enable us to better plan our future efforts.

Until such time as this space is available the functions of the committee will necessarily be limited.

#### *Recommendations:*

1. It is recommended that the Medical Heritage Committee be continued with the ultimate purpose of having a "Medical History in Oklahoma" display located in some appropriate place.

2. It is further recommended that the House of Delegates urge and encourage all Oklahoma physicians to seek out and preserve, as best they can, the artifacts and manuscripts that best depict medical history of this state.

### **SECTION III**

#### **STATE LEGISLATIVE COMMITTEE**

Your OSMA State Legislative Committee wishes to state, at the outset of this report, its deep regret and sense of loss after the untimely death of Mr. Dwight Whelan in February of this year. Dwight was not

only the Associate Executive Secretary of the OSMA but also its chief lobbyist and the staff member assigned to this committee. The committee wishes also to commend Mr. Don Blair and Mr. Ed Kelsay for the very effective and tireless manner in which they successfully executed the legislative programs initiated by Mr. Whelan.

*A. Second Session, Thirty-First Oklahoma Legislature:* During the past year the State Legislative Committee has considered a total of 57 bills that were introduced into the First or Second Session of the 31st Legislature. Each of these bills was evaluated by the committee and the OSMA position formulated. In some instances, the committee found it did not have enough information to formulate a policy and these bills were kept under "observation and study."

The OSMA JOURNAL and the OSMA NEWS have consistently carried a status report on all major bills since the session opened in January. This method was used by the committee to advise the profession on specific matters of interest to physicians. Direct mail and appearances before county societies or interested groups of physicians throughout the state was another method employed on occasion.

In Section F of this report you will find a summary of the major legislation of interest to the association. Not all of the 57 bills considered will be covered in the summary. The fol-

**CHART A**

	For	Against	No Position	Under Study	Total
Senate Bills	9	1	5	10	25
House Bills	14	4	6	8	32
House & Senate Resolutions	1	0	0	0	1
Totals	24	5	11	18	58

**CHART B**

	Introduced	Passed	Killed
Senate Bills	4	3	1
House Bills	3	2	1
Totals	7	5	2



lowing charts provide a statistical tabulation of bills considered and will give you an overall view of the association's efforts during this session.

Specifically, Chart A reflects the position taken on all Senate and House bills and on combined resolutions. Chart B reflects the number of Senate and House bills which were initiated by the OSMA and the ultimate disposition made of each.

In this committee's report to the House of Delegates last year, it was stated that the annual sessions of the legislature would tend to double the workload experienced with medical legislation. This statement proved to be all too true. Not only was the committee faced with the bills that were kept alive through the session interim, but many new pieces of legislation dealing with medical topics were introduced at the first of the Second Session. However, even when this is coupled with the death of the association's primary lobbyist, your committee feels that its efforts met with outstanding success.

**B. Rapport with Legislators:** Your State Legislative Committee has continued to emphasize the importance of "hometown" rapport with state legislators. This emphasis was underlined by the continued use of the legislative contact list made up of each legislator's family physician.

While this list was usually used on a selective basis, i.e., using a particular physician to influence a key legislator, on one occasion the entire list was used in a concerted effort to prevent the passage of two pieces of legislation.

On March 8th a letter was sent to all legislative contacts informing them that S.B. 95 and S.B. 664 would adversely affect the practice of medicine in Oklahoma and that the OSMA was requesting that they immediately contact their Senator and make medicine's views known to him.

S.B. 95 provided a procedure whereby the claimant in a lawsuit could ascertain the existence and amount of liability insurance held by a defendant and S.B. 664 provided that a party to a lawsuit should not be required to submit to more than

one physical examination and that the examination should be given in the presence of an attorney or some other person designated by the party to be examined. Both of these bills were opposed by the association.

As a result of the overwhelming response to this request, S.B. 95 was stricken from the calendar of the State Senate and S.B. 664 was never called up for a vote.

**C. "Doctor of the Day" and First Aid Station Program:** Again during this legislative year the OSMA cooperated with the Oklahoma Academy of General Practice to establish and maintain the legislative First Aid Station and the "Doctor of the Day" program.

To give greater emphasis to the project both organizations sought statewide participation by physicians to volunteer for staff duty each and every day the lawmakers were in session. The result was that almost every senatorial district in the state has been represented, at least once, by a physician volunteer.

The Oklahoma State Nurses Association again furnished a daily nurse to assist the physician in staffing the aid station.

The effectiveness of this legislative public relations activity cannot be overstated. Not only does the individual legislator take pride in having his personal physician in attendance but the entire legislature has the comfort of knowing that there is a physician present to serve their medical needs.

**D. "Doctors' Wives Day at the State Legislature":** On January 9th the Woman's Auxiliary of the OSMA and the State Legislative Committee jointly sponsored a "Doctor's Wives Day at the State Legislature." The purpose of this program was to provide doctors' wives from throughout Oklahoma with the opportunity of acquainting themselves with the daily routine and processes involved in the making of laws at the state level.

On the appointed day, 81 wives of Oklahoma physicians challenged ice covered highways and below freezing temperature to gather at the State Capitol Building for the pro-

gram. The women represented 26 different Oklahoma cities.

During the all-day session the ladies watched the Senate and House of Representatives in action, visited a Senate legislative committee meeting, and heard an explanation of state government from several state officials. Each wife was urged to visit her Senator's and Representative's office while she was in the capitol building.

**E. Next Session:** Your legislative committee is looking forward to a busy time between the end of the 31st and the convening of the 32nd State Legislature. During the interim two areas of interest to the medical profession have been designated for study by the Oklahoma Legislative Council. These areas are Workmen's Compensation and medical laboratory licensure.

(1) *Workmen's Compensation:* Following a series of "expose" articles in Oklahoma newspapers, the State Industrial Court and Workmen's Compensation laws came under legislative inquiry. S.R. 81, authored by Senator Clem McSpadden and accepted by the State Senate calls for the President Pro Tempore of the Senate to appoint a special committee of five Senators to study the present laws concerning Workmen's Compensation, their effectiveness, reasonableness, the equities involved and premium rates, and how they compare with those of sister states.

It is expected that one of the major areas of concern to this special committee will be that of medical testimony and reports regarding the percentage of disability of an injured workman and the possibility of establishing a new method of evaluating disability percentages.

Upon completion of the interim study the special committee is to file a report of its findings and recommendations with the President Pro Tempore of the Senate. These recommendations will probably consist of suggested legislation to be introduced into the First Session of the 32nd Legislature convening next January. Since many of these bills will deal with medical subjects, our association should be prepared to



work closely with this special committee.

(2) *Laboratory Licensure*: As an outgrowth of congressional hearings on medical laboratories in 1967, there has been a nationwide effort calling for the licensure of medical laboratories on the state level. Most of these efforts were, like the one in Oklahoma, the result of local concern and the bills were proposed and written to fit the individual needs of each state. (The bill introduced in Oklahoma, H.B. 1180, is discussed in full under Section F, Summary of Legislation, of this report.)

The latest efforts of medical laboratory licensure are coming from national organizations, but still seeking their passage on the state level. The latest development in this area is a so-called "model laboratory licensing bill" being promulgated by the Council of State Government. Your legislative committee expects this bill to be introduced during the next legislative session. There is the possibility that it may be presented to the Oklahoma Legislative Council for study prior to its introduction.

In either event it will be necessary for the OSMA State Legislative Committee to study this bill in its entirety and compare it to the bill as introduced by the OSMA. Since each state has individual problems of licensure it is felt that this bill will probably contain elements unacceptable to the medical profession in Oklahoma.

In addition, it is "rumored" that some medical technologist groups, both state and national, plan to introduce their own laboratory personnel licensure bills and this, too, could present problems for your State Legislative Committee.

(3) *Summary*: In summary it could best be stated that your OSMA Legislative Committee will have another busy year brought on by the interim legislative studies and by the annual sessions of the Oklahoma Legislature.

F. *Summary of Major Legislation*: The following is a brief summary of

the major bills which confronted the association during the past session. The bills will be covered under several broad categories. In each category the bills will be handled in chronological order of their introduction into the legislative process. Each category will be preceded by a paragraph of explanation and each bill discussion will contain a summary of the act, a statement of the OSMA position and a description of the final disposition made by the legislature.

(1) *INITIATED BILLS*: This section deals with the seven bills that were initiated by the OSMA during the past legislative session. These bills were prepared by your association for introduction into the legislative process.

*S.B. 116*: Since this bill would prohibit advertising by certain practitioners of the healing arts, it would directly affect the practice of chiropractic . . . the only practitioners of a healing art in the state that advertise. This bill was initiated, endorsed and actively lobbied by the association. It had the support of all groups in the healing arts field except the Oklahoma Chiropractic Association. It was introduced into the First Session of the 31st Legislature (1967) and was not allowed to die during the interim between the two sessions. However, as a result of a massive effort on the part of the Oklahoma Press Association in opposition to the bill, it was allowed to remain in the Senate Business and Industry Committee past the deadline date and was allowed to die during the Second Session.

*S.B. 346*: Authorizing the State Board of Health to adopt rules and standards, with the advice of the State Hospital Advisory Council and the State Board of Pharmacy, with respect to the storage and dispensing of drugs and medications for hospital patients. The Board of Pharmacy is impowered to inspect such drugroom facilities and shall report violations to the State Board of Health. This bill was initiated, endorsed and approved by the OSMA House of Delegates during its last

meeting and has been signed into law by the Governor.

*S.B. 416*: Amending the Workmen's Compensation Law to provide for payment for medical services to an injured employee who becomes deceased. Liability for such payment is placed upon the employer. Initiated and endorsed by the OSMA, this bill has now been signed into law by the Governor.

*S.B. 712*: The Medicare Law requires that each accredited hospital have a hospital utilization review committee and that such committees make decisions which can affect Medicare benefits. However, the law does not give committee members immunity from civil suits or actions brought by patients. This bill provides immunity from liability for good faith decisions and actions of members of such committees. The bill was initiated, endorsed and actively lobbied by your association, and has been signed into law by the Governor.

*H.B. 985*: Providing authorization for conducting autopsies in the event of unexplained deaths. Giving the State Medical Examiner, his deputy or the district attorney authority to order such autopsy and providing an appeal mechanism for anyone opposing such. This bill was initiated, endorsed and lobbied by the OSMA and has been signed into law by the Governor.

*H.B. 1180*: This is the Medical Laboratory Licensure Act that was initiated and endorsed by your association. It was in preparation for nearly a year and was the result of hundreds of hours work by several interested organizations.

The bill was written and rewritten several times by members of the Interorganizational Committee for Improved Laboratory Performance in Oklahoma. This committee was formed in December, 1966, and consisted of representatives from the five medical technologist groups, the OSMA, the Oklahoma Osteopathic Association, the State Health Department, the Oklahoma Hospital Association, the Oklahoma Association of Pathologists, and the American Chemical Society.



On October 8th, 1967, the bill was presented, in its final form, to the OSMA Board of Trustees and was formally approved and endorsed. This marked the second time the Board had considered this legislation. It first came before the Board during its July, 1967, meeting. Following that approval, it was found that certain portions of the bill were probably unconstitutional and a redraft was necessary.

The revised bill was presented to the Legislative Council's Committee on Health and Welfare, chaired by Senator Ralph Graves of Shawnee.

The Health and Welfare Committee considered the bill in November of last year. At that time, approximately 15 amendments were offered and accepted that so altered the act as to render it completely ineffective to accomplish its stated purpose.

Many of these amendments were offered by some of the members of the Interorganizational Committee that had originally worked out the total compromise bill. These organizations, knowing that the bill was a compromise and the result of hundreds of man-hours of work, did not keep faith with the other members of the committee and offered amendments that were to their advantage and in direct contradiction to the compromises of the other committee members.

These amendments so altered the purpose of the bill as to make it unacceptable to your legislative committee and forced them to actively oppose legislation that they had originally introduced. The opposition of the association caused the bill to be "locked up" in the House of Representative's Health and Welfare Committee until the deadline for house bills to be reported out of committees was past. The effect was to kill the bill.

It is now anticipated that the First Session of the 32nd Legislature, to convene in January, 1969, will see the introduction of several different bills calling for licensure of various medical technology groups. There is also the possibility, as reported under Section E, "Next Session," of

this report that the Council of State Government will seek to introduce a so-called "Model Laboratory Licensure Bill." From the limited information available on this piece of legislation it has become apparent that the bill will ignore the individual differences among states and the licensure laws that are already in existence and will probably contain sections unacceptable to Oklahoma and your association.

The OSMA State Legislative Committee is currently in the process of redrafting the Medical Laboratory Licensure Bill in order to again make it acceptable to the association. When it is completed, it will be presented to the OSMA Board of Trustees for formal approval and endorsement. The major difference will be that this bill will not be a compromise and will be initiated, endorsed and actively lobbied by your association in a direct confrontation to those groups planning their own legislation. It is the opinion of the chairman of the legislative committee that failure to present a united front could cost us a golden opportunity to obtain the best possible legislation for laboratory and laboratory personnel. H.B. 1180 consumed hours of work. The next session will no doubt consume hours of oratorical "pugilism" and bloodletting.

H.B. 1200: This legislation provides that the addition of blood, blood products or tissues to the human body shall be deemed a medical service and shall in no event be construed or treated as the sale of a commodity. This eliminates the possibility of a physician being sued for a "breach of implied warranty" when the use of such products gives a bad result. This bill was initiated, endorsed and actively lobbied by the OSMA and has now been signed into law by the Governor.

(2) *CHIROPRACTIC*: Three bills directly affecting the practice of chiropractic in the state of Oklahoma were before the legislature during the last session.

H.B. 836: This measure provided that the annual license fee for chiropractors be increased to \$20.00. The OSMA had no position on this bill

and it is reported here for information only. The bill was allowed to die in the House Legal and Physical Advisory Committee.

H.B. 851: The bill provided that no less than one member of the state Board of Health shall be a licensed chiropractor. The active opposition to this bill by the OSMA caused it to be killed in the House Committee on Social Welfare and Public Health.

H.B. 852: This bill would prohibit the exclusion of chiropractors from certain public programs. The effect would have been to force the Welfare Department to pay for chiropractic services. The association's active opposition to this bill caused it to be held in the House Committee on Professional and Occupational Regulation until it died.

See also—H.B. 1227 under Insurance.

(3) *INSURANCE*: The following four bills are included under the heading of "Insurance" because they affect health insurance programs or other insurance programs of interest to physicians.

S.B. 95: This bill would provide a procedure whereby a claimant in a lawsuit could ascertain the existence, amount of and provisions of liability insurance held by the defendant. This bill was actively opposed by the OSMA as it would tend to increase the amount of out-of-court settlements in professional liability cases. Your committee requested the cooperation of doctors throughout the state in contacting their Senators and Representatives and expressing opposition to the bill. This request met with such an overwhelming response that the Senate author of the bill requested that it be stricken from the calendar.

S.B. 664: This bill provided that a party to a lawsuit should not be required to submit to more than one physical examination and that said examination should be in the presence of an attorney or other person designated by the party to be examined. This bill would have limited the availability of medical testimony in damage suits and would have interfered directly with the practice of medicine. The bill was



actively opposed by your association and was allowed to die on the Senate calendar.

*H.B. 731:* This is permissive legislation allowing insurance companies to join together in the issuance of coverage supplemental to Medicare and requiring that the insurance commissioner approve all policy forms issued. This bill was endorsed by the OSMA but was killed on the Senate floor.

*H.B. 1227:* Providing that any clause in an insurance policy that limits the insured's free choice of health practitioner licensed under laws of Oklahoma shall be void. The effect of this bill would be to expand the practice of chiropractic. Currently, many insurance companies refuse to pay for chiropractic services and this bill would force them to do so even though their policy expressly limited payment to a medical or osteopathic physician. This bill was actively opposed by the OSMA and was allowed to die on the House calendar.

(4) *MEDICAL PRACTICE AND RELATED ACTS:* This section will deal with these bills introduced into the legislature involving the medical practice act and other acts dealing with practitioners of a healing art.

*S.B. 679:* Allowing the incorporation and licensing of nonprofit corporations to maintain and operate nonprofit optometric service plans and providing that such shall be regulated by the insurance commissioner. The effect of this bill would be to allow optometrists to establish a Blue Shield-like plan. Your association took no position on this bill. It is reported here for information only and has now been signed into law by the Governor.

*S.B. 726:* This bill expanded the foreign-trained physician limited licensure law to provide that such physicians could practice in "university infirmaries." This bill was killed on the floor of the House of Representatives by a full vote of its members.

*H.B. 1094:* An amendment to the existing "Good Samaritan Act": providing immunity from civil damages for all *practitioners of a healing art*. The bill was originally written and introduced to cover the addition of dentists and then was amended to include all "practitioners." Your committee endorsed this bill as it was originally written and actively sought to have it returned to its original form. It has been signed by the Governor.

(5) *MEDICAL SCHOOL:* Two bills and a resolution were introduced into the session that would effect the Oklahoma University Medical School.

*S.B. 477:* Establishing the State Hospital Construction and Maintenance Fund Board and calling for the establishment of a medical school in Tulsa. The introduction of this bill into the legislature was surrounded by a great deal of newspaper and television publicity and held statewide interest. Even though your state association had no official position, the Tulsa County Medical Society went on record as opposing the construction of a medical school in that city at the present time. When it was later amended to remove the medical school provision the bill was allowed to die.

*S.J.R. 52:* This resolution proposed an amendment to the State Constitution providing for a bond issue of nearly \$100 million for capital improvements to various state-owned institutions. The Oklahoma University Medical Center would receive \$26,870,000. The State Department of Mental Health would receive \$8 million for construction and equipping community mental health centers and for expenditure at Central State Memorial Hospital, Eastern State Hospital, Western State Hospital and Taft State Hospital. The State Department of Public Welfare would receive \$5,375,000 for expenditure at the Pauls Valley State School, Enid State School, Hissom Memorial Center, School for the Blind, School for the Deaf, Whittaker State Children's Home, Taft State Children's Home, Helena State School for Boys, Boley State School for Boys, Taft State School for Girls,

Tecumseh Girls' Town and for construction of a juvenile diagnostic evaluation and receiving center. This proposed amendment will come up for a vote next December 10th.

(6) *MENTAL HEALTH:* Several bills affecting mental health and mental health programs in Oklahoma were introduced during the last session. Two of them, *S.B. 409* and *H.B. 796*, dealt with civil procedure in Oklahoma's courts when questions of mental health were involved.

*S.B. 659:* This bill created the Oklahoma Commission on Alcoholism and designated it as the proper department for the study and research of the problem. The OSMA State Legislative Committee had this bill under observation and study and it has now been signed into law by the Governor.

*H.B. 796:* Providing that a court order for involuntary admission of mentally ill persons to a hospital shall not be considered as a finding or a judgment of mental incompetency. The bill was allowed to die on the House calendar. It was endorsed by your association.

*H.B. 1007:* Providing a minimum monthly wage for employees of state mental institutions and hospitals be set at \$245 rather than \$230. Your association had no position on this bill and it is now dead.

*H.B. 1028:* Appropriating \$100,000 to the State Department of Mental Health for use in matching operational expenses for mental health services as defined by the Community Mental Health and Retardation Act. This bill is now dead.

*H.B. 1029:* Providing for community mental health programs and community mental retardation programs; authorizing Department of Mental Health and governing boards of municipalities to contract for mental health services; authorizing the Department of Public Welfare and city and town boards to contract for community mental retardation services; vesting additional powers in the directors of mental health and public welfare. It died on the House calendar.

*H.B. 1030:* Providing a procedure for temporary hospitalization for



mentally ill persons and providing physicians immunity from civil damages. This bill was killed by a vote of the House of Representatives on January 16th, 1968.

(7) *MISCELLANEOUS LEGISLATION*: The bills reported under this heading cover a wide variety of unrelated subjects and are included here for convenience.

*S.B. 32*: Amending the Uniform Narcotic Drug Act and other acts relating to marijuana, barbiturates and stimulants and authorizing the Oklahoma Drug Commission to classify products as dangerous drugs. Originally introduced in the First Session of the 31st Legislature this bill passed the Senate and was sent to the House Committee on Social Welfare and Public Health where it remained during the interim between the first and second sessions. It was allowed to die in that committee without being called up for a vote. This bill was endorsed by the OSMA.

*S.B. 48*: Authorizing the Board of County Commissioners to contract for ambulance services in counties where such are not available on a commercial basis. The bill provided that counties would not be liable for damages due to the operation of such services but would require that such service carry liability insurance. Although this bill was endorsed by the OSMA it was vigorously opposed by the county commissioners. This opposition resulted in the bill being amended to such a point as to make it totally unacceptable and to destroy its original purpose. It is reported here for information only.

*S.B. 505*: Three similar bills were introduced into the state legislature covering the operation of nonprofit corporations such as the OSMA. These bills were *S.B. 502*, *505*, and *H.B. 1009*. For convenience, only *S.B. 505* will be reported. This bill established rules and regulations for the operation of certain nonprofit corporations and required the filing of certain reports. Since these bills could possibly have affected the operation of the OSMA they were kept under constant observation and study by the legislative committee. However, it was found that the OSMA

was already meeting all of the requirements set out in them so no position was taken. After *S.B. 505* was signed into law by the Governor, the others were allowed to die.

*S.B. 601*: Pertaining to the practice of electrology and requiring that a dermatologist be a member of the Board of Electrology. Endorsed by the OSMA Legislative Committee, it was passed by the Senate and sent to the House where it was allowed to die without being considered.

*S.B. 631*: Titled the Collection Agency Act of 1968, this bill sought to license and regulate collection agencies throughout the state. At the request of the Tulsa County Medical Society, this bill was kept under observation and study by the OSMA. The bill died in the state Senate.

*H.B. 1004*: Abolishing the Division of Regulated Drug Enforcement of the Oklahoma Bureau of Investigation and placing the duties of this division with the Director of the Bureau. The OSMA had no position on this bill and it was signed into law by the Governor.

*H.B. 1172*: Creating a lien in favor of a hospital rendering services to an injured person, such lien to attach immediately to any judgment in favor of the party. It was killed in committee.

*H.B. 1226*: A bill to include LSD within the definition of "stimulant" in Title 63 of the Oklahoma Statutes and thus making its possession a crime. The OSMA had no position on this bill and it was signed into law.

*H.B. 1276*: Providing that the Oklahoma Health Department shall be made a licensing agency for licensing, inspection and regulation of ambulances. It also provides for standards for licensing of drivers, attendants and attendant-drivers and requires ambulance companies to keep certain records and reports. This bill was designed to improve ambulance service and was endorsed by the OSMA. This bill was killed in the House of Representatives.

(8) *NURSING HOMES*: Two bills were introduced during the session affecting the operation of nursing homes in the state.

*S.B. 216*: Amending the Public Health Code by fixing minimum standards and requirements for the physical facilities of nursing, rest or specialized homes. This bill was introduced during the First Session in 1967, was passed by the Senate and sent to the House Committee on Professional and Occupational Regulations. It was not called up for consideration during the Second Session and is now dead.

*S.B. 643*: Creating the Oklahoma State Board of Nursing Homes and giving same the authority to establish rules, regulations and standards for the operation of nursing homes and for the licensing of administrators. The OSMA had no position on this bill and it has now been signed into law by the Governor.

(9) *PUBLIC HEALTH*: Five bills were active in the legislature dealing with the Public Health Department, Board of Unexplained Deaths or some general public health problem.

*S.B. 708*: Providing that the State Board of Health shall consist of four registered physicians, a psychiatrist, a pharmacist, a dentist, a hospital administrator and an osteopath. The OSMA position was to oppose any decrease in the number of physicians or increase in the number of people on the board. The bill was originally written to include only a pharmacist on the board but was amended in the House of Representatives to name all nine board positions. The Senate refused to concur in this amendment and requested a conference on the bill. The House and Senate conferees could not agree and the bill was allowed to die. There has been no decrease in the number of physicians on the board (5).

*H.B. 710*: This is the so-called "therapeutic abortion bill" passed by the House of Representatives during the 1967 session. The bill was extensively amended at the recommendation of the OSMA even though the association did not have a position on the bill. These amendments were designed to "tighten" the bill and give greater protection to Oklahoma physicians. When the bill was



called up for a final vote on the floor of the Senate it was recommitted to a Senate committee and allowed to die.

*H.B. 905:* Creating a Department of Pollution Control to promulgate rules and regulations for such. It placed certain responsibilities in water pollution control on the State Corporation Commission, Water Resources Board, Department of Health, Wildlife Commission, Board of Agriculture and the Attorney General. This bill was endorsed by the OSMA and was signed into law by the Governor.

*H.B. 1091:* Appropriating monies from the General Revenue Fund to the Department of Health for use in establishing child guidance center programs for the fiscal year. This bill was endorsed by the OSMA and has been signed into law by the Governor.

*H.B. 1093:* Appropriating monies to the State Department of Health for the fiscal year from the General Revenue Fund to be expended by the State Medical Examiners and Board of Unexplained Deaths. This bill was endorsed by the OSMA and has been signed into law by the Governor.

(10) *PUBLIC WELFARE:* Four bills involving the Oklahoma Department of Welfare were considered during the Second Session.

*S.B. 446:* Dealing with delinquent children, dependent and neglected children in need of supervision and providing for the detention of such children in certain state institutions. This bill was under study and observation by the OSMA Legislative Committee and is reported here for information purposes only. It has been signed into law by the Governor.

*S.B. 639:* This particular bill caused a great deal of excitement during the Second Session of the legislature as it called for the transferring of the Division of Vocational Rehabilitation of the State Board of Vocational Education to the Oklahoma Public Welfare Commission. The publicly stated reason for this move was that the monies received by the

Vocational Rehabilitation Department could earn maximum federal matching funds only if the department was a part of the Public Welfare Commission. The OSMA took no position on this bill and it is reported here for information purposes only. The Governor has signed the bill and it is now law.

*H.B. 719:* Making it unlawful for any woman to give birth to three or more illegitimate children and further making it unlawful for any man to be a father of this many illegitimate children or to cohabit with a woman at time of conception and declaring any violation of this act to be a felony and prescribing punishment. The OSMA took no position on this bill and it was killed in the House of Representatives.

*H.B. 1103:* Permissive legislation allowing state institutions under the jurisdiction of the Welfare Department, Department of Health, Department of Mental Health and Oklahoma Spastic Paralysis Commission to collect the cost of care, maintenance and treatment of patients or inmates from persons liable when such persons are financially able to pay. The OSMA had this bill under study and observation when it was killed in the House of Representatives.

#### *Recommendations:*

The Oklahoma State Legislative Committee recommends to the Board of Trustees and to the House of Delegates:

1. That the OSMA Legislative Committee be granted a continuous authority to develop and present policy statements to future sessions of the legislature without the calling of special meetings of the Board of Trustees or House of Delegates when devolving such policy statements are deemed necessary by the committee, and provided that such statements are in keeping with the general or specific policies of the Board or House.

The annual meetings of the State Legislature have underlined the importance of this authority in that this committee unlike other committees of this association must immediately review and establish a position on a

newly introduced bill in order to have testimony ready for legislative committee hearings. These meetings can and often do come within days after the actual introduction of the bill.

2. The House of Delegates reiterate its approval of the OSMA continuing to cosponsor the legislative First Aid Station and the "Doctor of the Day" program with the Oklahoma Academy of General Practice. Moreover, that pharmaceutical manufacturers are requested to aid us through their supplying necessary pharmaceutical products.

3. That this committee be granted the authority to continue to work with other groups and organizations in preparation of acceptable legislation.

4. That the House of Delegates lend its support and approval to intensifying the efforts in building ever greater rapport between medicine and individual legislators by:

(a) Encouraging local physicians to demonstrate more interest in their legislators and to participate actively in the association's legislative affairs.

(b) Encouraging all county medical societies and local physician groups to periodically host their legislators at dinners or luncheons and to discuss matters of mutual concern.

(c) Encouraging all state physicians to join and take an active part in OMPAC

5. That the State Legislative Committee again be granted a budget (taken from the allocated budget of the Council on Public Policy) of \$3,000 to be used by this committee in carrying out its tasks and related functions.

#### Report of the COUNCIL ON SOCIO-ECONOMIC ACTIVITIES

(APPROVED AS AMENDED)

#### *Council Members*

B. C. Chatham, M.D., Chickasha,  
Chairman

Ann K. Kent, M.D., Muskogee

Vernon D. Cushing, M.D., Oklahoma  
City

Edward K. Norfleet, M.D., Tulsa



Charles Bodine, M.D., Oklahoma City  
 Rex E. Kenyon, M.D., Oklahoma City  
 Don H. O'Donoghue, M.D., Oklahoma City  
 H. V. L. Sapper, M.D., Oklahoma City  
 John A. Blaschke, M.D., Oklahoma City  
 H. E. Denyer, M.D., Bartlesville  
 Roger Reid, M.D., Ardmore  
 Walter E. Brown, M.D., Tulsa  
 E. Cotter Murray, M.D., Oklahoma City  
 Thurman Shuller, M.D., McAlester  
 Mrs. Scott Hendren, Oklahoma City  
*Representatives—Oklahoma Health Economic Council*  
 B. C. Chatham, M.D., Chickasha, Chairman  
 Thomas C. Points, M.D., Oklahoma City  
 Hayden H. Donahue, M.D., Norman  
*Governmental Relations Committee*  
 Rex E. Kenyon, M.D., Oklahoma City, Chairman  
 Tom C. Sparks, M.D., Ardmore  
 Arnold G. Nelson, M.D., Midwest City  
 Rayburne W. Goen, M.D., Tulsa  
 J. T. Hicks, M.D., Lawton  
 Walter E. Brown, M.D., Tulsa  
 W. B. Renfrow, M.D., Oklahoma City  
*Medical Insurance Review Committee*  
 Richard E. Carpenter, M.D., Oklahoma City, Chairman  
 David R. Brown, M.D., Oklahoma City  
 Fred D. Switzer, M.D., McAlester  
 Tom C. Sparks, M.D., Ardmore  
 Adolph N. Vammen, M.D., Tulsa  
 Jack O. Alexander, M.D., Ponca City  
 Mark D. Holcomb, M.D., Enid  
*Prepaid Medical Care Committee*  
 Charles Bodine, M.D., Oklahoma City, Chairman  
 Charles S. Graybill, M.D., Lawton  
 William L. Parry, M.D., Oklahoma City  
 Joe E. Tyler, M.D., Tulsa  
 C. L. Lorentzen, M.D., Ardmore  
 Vernon M. Lockhard, M.D., Bartlesville  
 Sterling T. Crawford, M.D., Oklahoma City  
 Neil B. Kimerer, M.D., Oklahoma City  
 Robert E. Dillman, M.D., Tulsa  
 B. H. Gaston, M.D., Muskogee

Thomas W. Taylor, M.D., Tulsa  
 H. V. L. Sapper, M.D., Oklahoma City  
*Occupational Medicine Committee*  
 John A. Blaschke, M.D., Oklahoma City, Chairman  
 Bob J. Rutledge, M.D., Oklahoma City  
 Jack L. Richardson, M.D., Tulsa  
 James P. Bell, M.D., Oklahoma City  
 Casper H. Smith, M.D., Duncan  
 Robert L. Lembke, M.D., Ponca City

#### SECTION I

#### OKLAHOMA HEALTH ECONOMIC COUNCIL

Liaison with this activity has been maintained directly by the Council on Socio-Economic Activities in cooperation with Doctors Chatham, Donahue and Points, all of whom serve as members of the Oklahoma Health Economic Council (OHEC).

OHEC was spawned by the findings of the Oklahoma Health Economic Survey, a 1965-67 effort to measure the health economic situation in the state, sponsored jointly by the OSMA, the Oklahoma Hospital Association, and Oklahoma Blue Shield.

Based on the survey report, it was decided by the 1967 House of Delegates to do the following:

1. Carry out a three-year public information program designed generally to improve the situation regarding the private sector of health care financing. It was felt that the three original sponsors should invest in this phase of the operation by collectively appropriating \$36,000 the first year and \$18,000 for each of two consecutive years. Thus, the OSMA's contribution would be one-third of a total of \$72,000, or \$24,000. (Through a misunderstanding, the OSMA House of Delegates appropriated up to \$54,000 from savings, although it has never been our intention to spent this amount.)
2. To approve the following policy statement:

"The Oklahoma State Medical Association readily endorses other health insurance programs which provide comparable coverage and cost, but it reserves a special endorsement for the programs offered

by the Oklahoma Blue Cross and Blue Shield Plans."

3. To endorse a prototype prepayment program developed on request of the Oklahoma Health Economic Survey Task Force by Oklahoma Blue Cross-Blue Shield. This program, described in detail in the 1967 report, was to provide expanded benefits for Blue Cross-Blue Shield subscribers and to compensate physicians on the basis of their Usual, Customary and Reasonable fees.

The last item has been deferred to the Prepaid Medical Care Committee to participate in its development, and this activity is covered elsewhere in this report.

Regarding the public information program, it has been slow to develop due to our difficulty in finding and employing a suitable executive director for the project. However, on February 15th, we were fortunate to obtain the half-time services of Harl Stokes, who also serves as Executive Director of the Oklahoma Academy of General Practice.

The name of the activity was changed to the "Oklahoma Health Economic Council," to facilitate public understanding of its purpose, and the planning stage of a public information program was set in motion.

To finance the initial planning and program development, the OSMA contributed \$1,500, Blue Shield \$1,500, Oklahoma Hospital Association \$2,000, and the United Auto Workers \$500.

Several meetings have been held by the Executive Committee of OHEC, and consultations with a major advertising agency have assisted in developing a program format.

The campaign will stem from three "position papers," now in preparation. These will cover: "Findings of the Oklahoma Health Economic Survey," "The Value of Health Care," and "Financing Your Good Health."

From these background materials, OHEC will develop press releases and editorials, radio and television spot announcements, the format for live radio and TV discussions, a "Health Insurance Buyers Guide," speeches for all sorts of groups and clubs, and so forth.



These tools of mass communications will be incorporated into a campaign kit designed for community or county-wide implementation. One or more pilot communities will be selected for testing the program, through the cooperation of medical societies and their auxiliaries, hospital auxiliaries and other local sponsoring organizations as may be found.

As the program is perfected, it can be extended to other communities throughout the state.

In addition, while the community programs are in progress, other plans call for maintaining a state-wide public information campaign within the availability of funds.

Through this mechanism and these means, it is hoped that the sponsors can reach toward the overall objectives: To improve the level of health economic understanding and to encourage more Oklahoma citizens to budget for health needs by purchasing high-quality health insurance protection.

Because the program plan emphasizes a high degree of local, voluntary participation, the original budgetary needs can be reduced. Moreover, the program as outlined lends itself to a rather quick measurement of its impact, and it may be continued or dropped on a year-to-year basis in accordance with its public acceptance.

#### *Recommendations:*

1. It is recommended that the project of the Oklahoma Health Economic Council, as outlined in this report, be authorized for a trial period of June 1st, 1968 to the 1969 annual meeting of the House of Delegates.

2. It is recommended that the previous financial authorization of \$54,000 be rescinded in favor of appropriating \$6,000 from OSMA current income funds to constitute the association's proportionate share of the first-year budget.

## SECTION II GOVERNMENTAL RELATIONS COMMITTEE

Since the Governmental Relations Committee has concerned itself with the several Federal and State Health and Welfare Programs, as they relate to the private practice of medicine, this report will attempt a brief summary of the progress and problems encountered during the past year in each of these programs.

*Champus (military dependents medical care program):* Through the efforts of representatives of the Oklahoma State Medical Association and Oklahoma Blue Shield, physicians' payment for medical services rendered to eligible beneficiaries was converted to a "usual, customary and reasonable" fee concept in February of 1967. During 1967, the new program reached a level of \$770,051.24 and it is anticipated that the program will level off at about 1.2 million dollars a year. Administrative expenses are running only two per cent currently. As of January, 1968, no claims have been denied under the U-C-R concept, and none have been referred to medical insurance review committees.

*Public Law 89-97, Title XVIII, Part B (physicians' services for social security beneficiaries):* The Aetna Insurance Company reports that 96.9 per cent of all claims received are being paid within 20 days, over half within five days, and approximately one-quarter within six to ten days. The volume of claims is ranging from 21,840 to 27,700 monthly, and payments made to physicians are ranging between 1.15 to 1.68 million dollars per month.

The amendments to the Medicare Law, passed by the 90th Congress, included provisions for payment of unreceipted bills to the patient, certification and recertification requirements, exclusion of certain foot services, and the exclusion of benefits for refraction of eyes. OSMA membership has been informed of these changes through the medium of the OSMA Newsletter.

At its annual meeting on May 11th, 1967, the Board of Trustees of the Oklahoma State Medical Association

directed the Governmental Relations Committee to study the performance of the Aetna Insurance Company in its role as fiscal agent for this program, and to make recommendations to the Board of Trustees. This committee has conducted such a study, and is convinced that the Aetna Insurance Company's performance record is satisfactory and well above average when compared with experience in other states.

#### *Recommendation:*

This committee, therefore, recommends that the Board of Trustees and the House of Delegates of the Oklahoma State Medical Association commend the Aetna Insurance Company for its service and restate our endorsement of the Aetna Life and Casualty Company as the preferred fiscal agent for Part B of Public Law 89-97.

*Public Law 89-97, Title XIX (medical care for the indigent):* In its initial implementation of this program, the Oklahoma State Department of Public Welfare elected to use part of its Title XIX funds to "buy in" to the supplementary physicians benefits program (Title XVIII, Part B) for Old Age Assistance recipients and to pay deductibles and co-insurance for these recipients. There were many problems inherent in this arrangement: (1) Physicians were required to file two separate claims, one with Aetna for the basic Medicare benefit and one with DPW for the co-insurance and deductible. (2) Processing of each claim required not only confirmation of eligibility from Baltimore, but further required difficult and time consuming inter-departmental communication in order to determine if deductibles had been satisfied. (3) Payment by two separate agencies for the same claim necessarily resulted in errors.

As of July 1st, 1967, therefore, the Department of Public Welfare elected to serve as the fiscal agent for payment of all physicians' fees for the "buy in" eligible beneficiaries. The usual, reasonable and customary concept continued; and this committee recognizes that payment of claims under this program has been



more efficiently and expeditiously handled than under the dual fiscal agent arrangement. Some problems have been encountered and are discussed later in this report.

The cost of the Title XIX program is exceeding the Department of Public Welfare's budget of 70 million dollars for the current fiscal year, requiring limitation of some services, notably payment for injectable medications, x-ray, ECG interpretations, and laboratory fees. The prospect of legislative action in regard to earmarking Oklahoma State Sales taxes for use of the Department of Public Welfare may place further limitations on available funds for Medical care under this program.

#### *Recommendation:*

The Governmental Relations Committee recommends that the Board of Trustees and the House of Delegates of the Oklahoma State Medical Association reemphasize its statement that: When budgetary deficiencies of the Department of Public Welfare require economies, said curtailment should be directed toward limitation of the scope of covered services rather than reduction of the individual fee paid to physicians.

*Partnership for Health Act, Public Law 89-749, amended by Public Law 90-174 (comprehensive health planning):* The state Health Planning Agency was created on August 30th, 1967, by Governor Bartlett and assigned to the Division of the Budget. It is a single state agency designated to carry out statewide comprehensive health planning activities as provided under the law. The Governmental Relations Committee has not officially met with representatives of this State Agency, although an invitation has been offered to their Director to meet with us. At the time of this report, the State Advisory Committee of this agency has not yet been named. The Oklahoma State Medical Association, acting through the Board of Trustees, has submitted the names of ten physicians as knowledgeable and capable for service on the committee.

The Agency has held three separate orientation meetings at which the

medical association was represented by physicians and members of the Executive Staff. The program is only in the very early planning stages, and this committee can offer no concrete report at this time.

#### *Problems:*

(1). Some instances of alleged abuse in the area of physicians' services and fees have been reported by the Oklahoma State Department of Public Welfare and the Aetna Life and Casualty Company. Chief among these are (a) excessive office calls, home or nursing home visits for the individual patient; (b) excessive use of injectable medications which in some cases did not appear to be medically indicated or which could have been prescribed orally; and (c) excessive charges for laboratory procedures performed by a reference laboratory charged to the referring physician, and included on his claim for services.

While this committee is aware that seemingly excessive payments to physicians do not necessarily imply either misuse or abuse of the program, it has reviewed claims, in conjunction with the Medical Insurance Review Committee, in which abuse did seem to be implied. The committee would emphasize that abuse was suspected by the two fiscal intermediaries on claims submitted by less than two per cent of Oklahoma physicians. Such a finding must necessarily imply that over 98 per cent of Oklahoma physicians are rendering only necessary services and at fair and equitable fees; and the committee would commend these physicians for high ethical and professional standards.

(2). Increased office and living expenses have prompted some physicians to raise fees for professional service since the advent of these Governmental programs. Inasmuch as the fiscal intermediaries have developed "profiles" on each physician, claims for fees in excess of the individual physician's "usual" charge are being rejected by computers and on occasion reduced. Physicians are reminded that they have every right to increase or decrease their fee structure as a result of changing op-

erating costs. They are further reminded that claims for above-normal fees can be processed more expeditiously when they are accompanied by a letter of explanation. Moreover, the law requires that requests for over-all increases in fee structure must be accompanied by an explanation of the reasons for such a request. Physicians need not use dollar figures in the explanation; but some percentage figures should be offered to document increased costs of operation.

(3). The several fiscal intermediaries, using their own statistical material, have developed differing "profiles" on individual physicians; and there has not been, in the opinion of this committee, adequate communication between the intermediaries in this regard. As a result, one intermediary will allow a higher fee for the same procedure, performed in the same geographical area, than will another intermediary. Such differentials must necessarily breed discontent and raise questions in the minds of physicians submitting claims for those procedures.

### *SECTION III*

#### *MEDICAL INSURANCE REVIEW COMMITTEE*

Since July 1st, 1966, the association has maintained a fee review mechanism to adjudicate claims involving health care programs which pay physicians according to their "Usual, Customary and Reasonable" fees (UCR).

The OSMA has a Medical Insurance Review Committee which primarily serves in an appellate capacity, but which also takes primary jurisdiction in cases where the county medical society has not chosen to appoint a committee or else denies original jurisdiction for some reason. To date, 34 county societies have appointed committees and 11 have not.

When the tremendous volume of Medicare claims (handled by Aetna, Travelers and the Department of Public Welfare) and Medicaid claims (handled by DPW) are considered, then the number of claims submitted for review has been extremely light.



Only 39 cases have been sent to review committees by the Department of Public Welfare, 49 by Aetna, three by Travelers, and two by Blue Shield (administrators for the Federal Employees program and for CHAMPUS). The OSMA committee has taken primary jurisdiction for a number of these cases, and several cases have been heard on appeal. One case cost a physician his OSMA membership.

#### *Review Program Design:*

The review plan established by the OSMA provides that the carrier, in a case where the charge appears to be above the acceptable range for an area, shall first communicate with the physician in an attempt to settle the problem. Failing to do so, the case must be documented by the carrier and referred to the appropriate county medical society review committee, and the physician shall be so advised. The committee shall attempt to act within 14 days, having the options of either finding in favor or against the billed charges. If the charge is determined to be unreasonable, the committee is obligated to recommend a reasonable fee for settlement. The carrier should then notify the physician of the committee recommendation, and in the case of a fee reduction, the carrier should advise the physician of his right to appeal to the OSMA committee. If the fee is ruled by the county committee to be reasonable, the carrier is morally obligated to accept this ruling, but may, in exceptional cases, appeal the case to the OSMA committee.

#### *Problem Areas:*

The OSMA review program has not worked to perfection. Here are some of the problem areas:

1. The functioning of the county committees has ranged from outstanding to poor. Some committees do not seem to understand their responsibilities. Other county societies have ignored the whole program by declining to appoint committees, thus throwing the burden of their work on the OSMA committee.

2. A high percentage of the review cases received have involved the question of over-utilization rather than excessive charges, and matters of this type are extremely difficult to handle with any precision.

3. The Department of Public Welfare, although it approved the review plan in the beginning, has never followed the program as prescribed. Payments to physicians are frequently made at reduced levels without either utilizing the review mechanism or advising the physician of his right to a review. On the other hand, DPW officials state that complete adherence to the OSMA program would inundate the review committees, so they are apparently following the system of paying what is considered to be a reasonable fee and leaving it to the physician to initiate review activity.

4. Case documentation by the carriers is often too sketchy to permit an accurate decision.

5. Even on the assumption that the review mechanism is not being employed by the carriers at the optimum level today, the staff and committee work at the OSMA and metropolitan county levels has nevertheless reached burdensome proportions. The medical insurance review system sponsored by the OSMA in an integral part of a UCR program; a necessary step if organized medicine is to exert medical control over the arbitration of medical service values.

If the system cannot be made to work by a near-100 per cent cooperation on the part of all OSMA members and by the full cooperation of the carriers, then we shall see more and more decisions being made by government. The ultimate alternative to an ineffective medical insurance review program will be a rigid fee schedule.

There is much to be said for maintaining a compensation program which recognizes the variable factors truly involved in medical economics, rather than slipping into a more regimented system which obscures the individual character of medical practice.

#### *Recommendations:*

1. To rejuvenate the OSMA medical insurance review program, it is recommended that the roster of county medical society committees be reconstituted promptly after the 1968 annual meeting, and that a strong appeal be made to county presidents to attain a higher percentage of the local societies represented by working committees.

2. It is recommended that a series of meetings be held during the summer of 1968 with representatives of the UCR carriers in order to perfect the review mechanism and to seek improved adherence to the system.

3. It is recommended that a statewide conference of county medical society review committees be held in September for the purpose of orienting them toward their function and responsibilities.

4. It is recommended that the OSMA carry out a concerted information program to the entire membership concerning the UCR program and the operation of the review mechanism.

5. In view of anticipated growth in the volume of claims for processing, it is recommended that the Board of Trustees consider the employment of a full-time staff person to coordinate the medical insurance review program.

### **SECTION IV PREPAID MEDICAL CARE COMMITTEE**

#### *Background:*

From 1965 until 1967, under the authority of the House of Delegates, the Council on Socio-Economic Activities participated in a \$28,000 Health Economic Survey. The general purposes of this survey were to identify medical economic problems, to develop corrective solutions, and to thereby strengthen the private sector of health care financing against further government inroads.

Our House of Delegates supported the theory that governmental health care programs are often based on vacuums existing in the quantity or quality of private health insurance plans held by the general public.

While it is not the purpose of the Prepaid Medical Care Committee to



reiterate the findings of the Health Economic Survey, several facts and House of Delegates' recommendations approved at the 1967 annual meeting have had a direct bearing on the activities of your committee and Oklahoma Blue Cross-Blue Shield during the past year.

First, the following survey results point up the need for improvement in the private sector of health care financing mechanisms:

—Only 57.1 per cent of Oklahoma's population has hospital insurance.

—Only 56.6 per cent of Oklahomans are insured against the costs of physicians services.

—On the average, only 68.8 per cent of physicians charges are paid by insurance during the period of hospitalization, and only 59.2 per cent of charges are covered by insurance during the complete spell of illness requiring hospitalization.

—62.8 per cent of patients surveyed said they wanted more health services covered by insurance, and 64.9 per cent said they wanted a higher percentage of the bills paid by insurance benefits.

Secondly, Oklahoma Blue Cross and Blue Shield were compared favorably in the report of survey findings presented to the House of Delegates last May:

—Blue Cross pays 86 per cent of the hospital bill on group contracts versus 82.1 per cent by commercial insurers. On individual contracts, there is a marked difference in the quality of coverage (82 per cent for Blue Cross and 56 per cent for commercial insurers).

—Oklahoma Blue Cross and Blue Shield, with premium retention factors of only 4.6 per cent and 10.4 per cent respectively, offer the masses of the people the best return on their health insurance dollar.

Finally, the House of Delegates approved the 1967 report of the Council on Socio-Economic Activities which contained the following recommendations:

—In recognition of Oklahoma Blue Shield's unique cooperative relationship with the OSMA, and in view of its public service philosophy and mass enrollment techniques in pro-

viding prepaid health care protection to all Oklahoma Citizens on a non-profit basis, it is recommended that the association recognize Blue Shield as the preferred fiscal agent for health care financing.

—It is recommended that the OSMA endorse the program developed by Oklahoma Blue Cross-Blue Shield in response to the request of the Health Economic Survey Task Force for an improved product (a prototype program to expand the covered services of Blue Cross-Blue Shield was attached to the report of the Council on Socio-Economic Activities. The plan featured payment of the "Usual, Customary and Reasonable" charges of physicians).

Oklahoma Blue Cross-Blue Shield responded to the recommendations of the Council on Socio-Economic Activities and to the subsequent actions of the House of Delegates by undertaking the necessary planning to implement the new prepayment program.

At this point, the Prepaid Medical Care Committee assumed jurisdiction for liaison between the OSMA and the Blues.

#### *The Prototype Program:*

As previously stated, Oklahoma Blue Cross-Blue Shield has been working on an expanded benefit program in keeping with the House of Delegates' action to provide Oklahoma citizens with more comprehensive coverage.

This program included short, intermediate and long-range objectives to provide more generous health care benefits. It also featured a compensation program for physicians on the basis of Usual, Customary and Reasonable fees, providing the insured party with the options of buying 100 per cent coverage, 90 per cent, 80 per cent or 70 per cent.

In approving this general concept, the House of Delegates said: "This program will not only provide more equitable payments to the medical profession, but will represent a much greater bargain to Blue Cross and Blue Shield insureds by extending the scope of covered benefits—by affixing a more predictable value to

the coverage afforded—and by providing a range of options to suit the financial abilities of the bulk of Oklahoma's middle income families."

Several items in the prototype have already been implemented, such as more liberal room allowances for both group and individual subscribers, an improved program for supplemental coverage to persons over age 65, extension of the Major Medical option to groups of only five employees, and a group coverage option to provide outpatient diagnostic x-ray and laboratory benefits.

These benefits, coupled with an intensive marketing program, have enabled the Blues to effectively pursue another objective of the Health Economic Survey Task Force—increased enrollment of the state's population in prepayment programs.

For example, the Blues have experienced their greatest group enrollment success since 1952, with over 100,000 persons added to their rolls. More group contracts were sold in March of 1968 than in the entire year of 1966.

The scope of the new program for physicians' services will be determined in late Summer, 1968, but it is felt at this time that the medical benefits will be about the same as presently offered.

#### *The UCR Review Mechanism:*

In order to pay according to the normal charges of most physicians under the Usual, Customary and Reasonable fee concept, Oklahoma Blue Shield recognized that it must establish a procedural mechanism. Conferences were held with 16 groups of physicians, and the product of these meetings is attached as Exhibit A.

A copy of the Blue Shield review mechanism was mailed to each OSMA member on March 7th. About one dozen letters of negative reaction were received from individual physicians.

The OSMA Prepaid Medical Care Committee has not endorsed the proposed draft of the review mechanism, preferring to leave this to the House of Delegates since it represents a necessary follow-up effort



by Blue Shield to implement the Usual, Customary and Reasonable fee program approved by the Delegates at the 1967 annual meeting.

If the House of Delegates approves the proposed draft of the review plan, then the Prepaid Medical Care Committee will work with Blue Shield to perfect the program and get it into operation.

The following observations are offered with respect to the proposed UCR program and the suggested review mechanism:

1. The Usual, Customary and Reasonable fee concept is not a service contract.

2. It is estimated that it will be necessary to apply the review system to only about five per cent of the claims.

3. Medical Insurance Review Committees, established by the OSMA and its county medical societies, will have authority to rule on the reasonableness of charges.

4. There is a provision for increasing fees to keep pace with the economy; a 90-day period is required by Blue Shield for fee adjustments since it will be necessary to review premium structures to accommodate greater payments.

5. Likewise, the prevailing range of fees in a given area may be adjusted when as many as 50 per cent of physicians who perform a given service request a new "usual" fee.

6. The entire program is designed for the purpose of providing more comprehensive benefits for Blue Shield subscribers and to pay physicians according to the market value of medical services. If approved, the UCR program should enable Blue Shield to enroll many more Oklahomans in a high-quality prepayment plan.

The question to be considered at this annual meeting is whether or not to approve the proposed review mechanism as a means of determining Usual, Customary and Reasonable charges.

#### *Recommendations:*

1. The Prepaid Medical Care Committee herewith transmits the pro-

posed review mechanism to the House of Delegates for its consideration and action.

2. If the House acts favorably on the first recommendation, then it is further recommended that the Prepaid Medical Care Committee establish immediate liaison with Oklahoma Blue Shield for the purpose of developing the best possible scope of benefits under the UCR program in order to provide optimum accommodation for the various classes of medical services.

#### *"EXHIBIT A"*

#### *PROPOSED USUAL, CUSTOMARY AND REASONABLE PROGRAM*

I. *Purpose:* The purpose of the Usual, Customary and Reasonable Program is to provide a mechanism whereby Blue Shield could pay the reasonable charge of the physician for a covered service while still demonstrating to the public a reasonable safeguard against unlimited liability.

II. *Criteria for Determining Acceptability of Charges:*

A. *Usual Charge* refers to the amount which the individual physician usually and most frequently charges all his patients for a specific professional service.

B. *Customary* relates to the range of usual charges made by physicians of similar ability and experience for the same service within the specific socio-economic area.

C. *Reasonable Charge* is that charge which meets both the Usual and Customary criteria as defined above, or is justified due to complexity of treatment which merits special consideration.

III. *Method of Determination:*

A. *Usual Fees:* A profile of charges would be developed for each individual physician, the profile being based on historical data of the charges of the physician or a survey of his charges—or a combination of both. The physician's individual profile shall be available to him (and only to him) upon his written request.

B. *Customary Fees:* A range of fees is compiled for each of the services performed and reported by the individual doctors within a given

area which will assure the optimum level of paid-in-full benefits. This range will be established to accommodate a minimum of 90 per cent of the services in a given socio-economic area.

1. The delineation of a given area for establishing customary payment levels is based on such factors as: Demographic characteristics of the population, general economic characteristics, unique patterns of medical practice, logistical patterns of medical care and natural geographic boundaries.

2. The above data will be reviewed and the customary range will be adjusted when as many as 50 per cent of physicians who perform a given service in a socio-economic area request a new "usual" fee.

IV. *Payments to Physicians and Members:*

A. Payment will be made directly to physicians for services provided under the program, unless Blue Shield is directed by the physician to make payment directly to the patient.

A physician may accept or reject a U. C. R. fee on each claim submitted to Blue Shield. (Therefore, each and every claim is an independent contract in itself.) If U. C. R. is refused, payment will be based on the physician's previously accepted usual charge or the average charge in the physician's socio-economic area, whichever is the greater. This payment will be made to the patient.

B. There will be some cases where a question will arise concerning the amount of a benefit which is payable because the physician's charge exceeds either his usual fee or the customary range of fees. Where this occurs, Blue Shield will take the following steps:

1. The claim will be reviewed with Blue Shield's medical advisor and/or Medical Advisory Committee to determine if unusual clinical circumstances or medical complications were involved. If the Advisor or Committee feels the documentation of the case is sufficient to warrant payment in full, the charge will be paid.



2. If additional facts are needed, information may be obtained from the doctor himself or the hospital chart. If satisfactory documentation to warrant payment in full is obtained through these channels, the charge will be paid.

3. If Blue Shield still has some question about the services and fee, and no agreement is reached between Blue Shield and the physician with respect to such matters, Blue Shield shall refer the matter to the appropriate Medical Insurance Review Committee established by OSMA in the prescribed manner.

4. In the event the matter is still not resolved through the total OSMA Insurance Review function, payment shall be made directly to the member. Payment will be based on the physician's previously accepted usual charge or the average charge in the physician's socio-economic area, whichever is the greater.

*V. Procedure to Change Fees:* A physician may change his recorded usual charges by filing a written 90-day notice of his intention with Blue Shield, giving the reason for the increase.

When a physician files for an increase in more than one fee, consideration may be given to establishing guidelines based on changes in the Consumer Price Index, date and amount of last fee increase, etc.

In the event his new charge exceeds the upper limit of the Customary Range of Fees in his area, he will be so informed by the plan and there are the following alternatives:

A. He may resubmit; or

B. He will be requested to continue accepting his old fee until such time as his requested fee falls within the Customary Range of his area. The physician will be so notified by Blue Shield when this occurs.

*VI. Liaison with Physicians:* Blue Shield assumes the responsibility to maintain active liaison with medical review committees and other appropriate organizations of physicians such as County or State Professional Societies for the following purposes:

A. To review specific cases where there is some question regarding the reasonableness of the fee, provided

that prior review of the claim by Blue Shield and contact with the physician have not resulted in agreement as to the charge.

B. To provide Blue Shield with current information on changing methods of practice, especially with respect to charges for new procedures resulting from the development of new medical techniques and other advances in medical science.

C. To assist in the handling of problems of mutual interest to physicians and Blue Shield.

D. To assist in the evaluation of any studies made by Blue Shield or Professional Society, and to coordinate Blue Shield actions to maintain a high quality of medical care at a reasonable cost.

#### SECTION V COMMITTEE ON OCCUPATIONAL MEDICINE

The committee met on one formal occasion during the past year and on two informal occasions.

The formal occasion was in the offices of the State Medical Association on April 6th, 1968.

Attending were members of the Oklahoma State Medical Association Committee on Occupational Medicine, John A. Blaschke, M.D., Chairman, Robert L. Lembke, M.D., Ponca City, James P. Bell, M.D., Oklahoma City, Casper Smith, M.D., Duncan. Absent were Bob J. Rutledge, M.D., Oklahoma City, and Jack L. Richardson, M.D., Tulsa.

The committee met with the members of the Industrial Court of the State of Oklahoma, Judge A. R. Swank, Jr., Judge Keith Cooper and Judge Bruce L. Evans.

Effective liaison had previously been established with the judges, and discussions were held in previous years regarding methods of improving relations between physicians and the Industrial Court.

The question of wide divergence in medical opinion and wide variations in medical disability rating had been the source of concern to this committee and the judges over a period of many years. A recent series of articles in the Tulsa and Oklahoma City metropolitan newspapers, in which both committee

members and judges of the court were quoted from time-to-time, made necessary a meeting to work out differences of opinion. Two items were discussed at the April 6th committee meeting, as follows:

A. The Judges of the Industrial Court were unanimous in their opinion that a medical situation existed in an Oklahoma community which, from their point-of-view, was unacceptable to the public interest and was creating grave dangers to the medical profession generally. The three judges present were so concerned about the situation that they had on their own initiative consulted certain physicians in Tulsa and asked them to investigate the situation. The judges reported that unnecessary surgery, repeat surgery, lack of cooperation between physicians, and failure to cooperate in transmitting medical information from one physician to another were the sources of their concern. After considerable discussion, the committee indicated to the Judges that if they could provide specific statistically valid information supporting their claims that the committee would then be in a position to make certain recommendations to the House of Delegates of the Oklahoma State Medical Association for further action. Lacking this specific information, the committee would do everything in its power to cooperate with the judges and to pass on information to the President of the State Medical Association and the House of Delegates of the State Medical Association in an effort to correct the alleged abuses.

The committee also indicated to the judges its willingness to cooperate on a personal basis and an informal basis in working out any complaints which were troublesome.

In this connection, the committee is beginning to realize that one of its roles may be to serve as an informal liaison between the Judges of the State Industrial Court and physicians of the Oklahoma State Medical Association in working out day-to-day problems and contentions. The committee indicated its willingness to serve as a repository for



complaints of specific problems which the judges will bring to their attention.

Once adequate information has been acquired on which definite recommendations can be based, detailed information will be forwarded to the House of Delegates.

The committee then concerned itself with the judges in terms of the long-standing problem of the present method of arriving at medical information and medical disability evaluation. This committee has held previously that the present adversary system, utilizing two contending medical opinions as a method of arriving at the degree of disability, is unscientific, inequitable and unfair to the claimant. This subject was reintroduced at this committee meeting.

The judges of the State Industrial Court still adamantly oppose any real change in the present system. It is their feeling that the court is performing a better job in terms of efficiency of operation, equitable disability awards and elimination of dishonesty better than anytime in its previous history. It was pointed out that recent newspaper articles have, however, emphasized that compensation insurance rates in the State of Oklahoma are higher than surrounding states; yet the awards that ultimately arrive in the injured man's pocket are less than in surrounding states; and, somewhere there is inefficiency in the system or else this would not be true. This factual information is what concerns your committee:

After review of pros and cons between the judges and various committee members on various objections that the committee members feel toward the present method of receiving medical testimony, it was agreed by all concerned that this problem would bear further study.

The committee indicated its willingness to meet as a group with the Judges of the Oklahoma State Industrial Court at any time for resolution of any problems. Further, the committee agreed that anyone of its

members could be called by the State Industrial Court for aid in resolution of any particular problem that may arise. It is felt that this close liaison between the court and the members of this committee may continue to serve a useful function.

*Additional Activities:* The first activity of this committee during the present year was the special issue of the Journal of the Oklahoma State Medical Association, in June, 1967, which was entirely devoted to the subject of disability evaluation. Authoritative medical sources in the State of Oklahoma presented current information as to the proper method of disability evaluation.

This special issue has been adopted by the Oklahoma City Claimsmen Association as the official guide to disability evaluation in the State of Oklahoma. Each claim adjuster in the State of Oklahoma has received a copy of this issue of the Journal.

In September, 1967, committee member, Doctor James P. Bell of Oklahoma City, attended the American Medical Association Congress on Occupational Health which was held in Atlanta, Georgia. This meeting, designed for a free-exchange of ideas between state and county representatives of the American Medical Association, seemed worthwhile. It is the feeling that at least one member of this committee should be present at the annual meeting and particularly one should be delegated to attend the meeting in New York City on September 30 and October 1, 1968. The State Occupational Medicine Committee Chairmen's Meeting held the day prior to the Congress on Occupational Health is also an important national function.

Doctor James P. Bell, Doctor Bob Rutledge and Chairman Doctor John A Blaschke have met informally on numerous occasions to consider possible further functions and responsibilities of this committee. In these informal conferences, major regional and state managers of compensation and liability insurance companies have presented their points-of-view.

A common point-of-view among compensation and liability insurance

claim managers and management officials is their concern over the inability of physicians generally to exercise any degree of control and supervision over individual physicians. For example, it was pointed out that a good deal of obvious dishonest testimony is occurring in various courtrooms and in various depositions throughout the state. It is the wish and concern of top management in the claim departments of the insurance industry that have been contacted in this state that the Oklahoma State Medical Association should concern itself with some method of minimizing this particular abuse.

One suggestion has been made to this committee that the State Medical Association appoint a representative of each major medical specialty to a special committee. The function of this committee would be to assign individuals to sit-in on deposition hearings in various courtroom testimonies to monitor testimony by various physicians. It is the feeling of these officials of the insurance industry that if a recognized specialist in a particular field was sitting in a courtroom that this would be the strongest deterrent to purged and dishonest testimony that could be developed. It was the feeling of these insurance individuals that this approach would be much more powerful than a punishment-type approach which would be very poorly effective and difficult to execute.

Finally, the committee is concerned with other functions and responsibilities which have been given little attention in times past.

By agreement, the committee has set up for itself the following objectives to guide the function and role of the committee in future years:

1. Promoting or improving an Occupational Health Program.
2. Encouraging and educating the medical profession to provide medical services and direction required from good Occupational Health Programs.
3. Assimilating information about scientific and socio-economic activities of Occupational Health Pro-



grams, including Workmen's Compensation, rehabilitation, industrial hygiene and the health team approach.

It is becoming increasingly obvious to your committee that some of the broader aspects of an Occupational Health Program need considerable effort in future years, and considerable improvement and function in the role of the committee can be developed.

It is the feeling of this committee that in future years a broader view of the Occupational Health Program should be maintained to promote Occupational Health Programs other than those of immediate pertinent concern in the State Industrial Court. It is felt that the physicians of the state should exert particular leadership on the matter of preventive medicine and rehabilitation. The committee in future years should reflect this interest of physicians generally.

#### *Recommendations:*

1. *General:* The Occupational Medicine Committee should be continued as an important function of the State Medical Association.

2. *Composition:* The committee should be comprised of physicians known to be interested in the subject. It is the recommendation of the committee that in future years perhaps broader involvement should be solicited from physicians devoting fulltime careers in Occupational Medicine. It is the feeling of the committee that the Occupational Medicine specialist should not be the only physician concerned in this problem and direct entirely the affairs of the committee, but certainly he should be adequately represented. The specialist engaged in traumatology, such as neurosurgeons and orthopedic surgeons, likewise should continue to be properly represented on this committee with due attention to population centers in the state. General practitioners, psychiatrists, public health administrators, rehabilitation specialists and rheumatologists all can play a useful role in the functions of this committee.

3. *Objectives:* A definite program of committee objectives and activities for the 1968-69 year is proposed as follows:

A. *Workmen's Compensation.* During the coming year, the Oklahoma Legislative Council plans a special study of the entire Workmen's Compensation Law. It is the recommendation of your committee that the Occupational Medicine Committee and the State Legislative Committee of the Oklahoma State Medical Association plan to work closely and cooperatively in presenting to this Legislative Council the attitudes, feelings, opinions, recommendations and abilities of the Oklahoma State Medical Association and the physicians of the State of Oklahoma so that major improvements may be made in any statutory changes in the law which will eliminate the many current abuses and enable physicians to fulfill their responsibilities scientifically, honorably and honestly in making disability evaluations. Emphasis during this next organizational year should be primarily devoted to this area since the findings of this Legislative Council and the action of this Legislative Council will influence the medical aspects of Workmen's Compensation for many years. It is not only important that this committee and the Legislative Committee be involved in this function from a standpoint of improving medical testimony and eliminating the abuses in disability evaluations, but almost certainly there is bound to be some effort to establish specific fee schedules. A very careful and watchful attitude will be necessary to prevent this sort of discriminatory legislation.

B. *Physician-education in Workmen's Compensation* is a continuing responsibility of this committee. The chairman of your committee has agreed to submit various brief editorial-type essays to the State Medical Journal reflecting views of the Judges of the State Industrial Court, State Claimsmen Association and the Plaintiffs Attorney's Association for the information of all physicians. It is the opinion of your committee that the physician-educational process, as

far as Occupational Medicine is concerned, should begin at the Medical School level. A vigorous effort during the coming year to involve faculty members in this concern particularly in the new School of Public Health, will be made.

C. *External Liaison.* This report has already reflected the opinion of your committee that an increasingly important role lies in liaison with various parties interested in Occupational Medicine such as (1) Industrial Court Judges; (2) Labor Unions; (3) Newspaper writers; (4) Insurance industry; (5) Oklahoma Claimsmen Association (The Oklahoma Claimsmen Association has made as part of its official resolution a support of the Oklahoma State Medical Association's position on Occupational Medicine. This desire to be helpful to us is commendable, although it is unfortunate in view of the fact that neither the Occupational Medicine Committee nor the Oklahoma State Medical Association has ever taken a definite position in regard to the current controversy over the State Industrial Court); (6) Safety engineers; (7) National Association of Claimant's Attorneys.

4. *Specific Recommendations:* The Occupational Medicine Committee of the State Medical Association urges the adoption by the House of Delegates of the Oklahoma State Medical Association the following resolution:

WHEREAS, the Oklahoma State Medical Association continues in its deep concern with the medical profession's role in Workmen's Compensation in the State of Oklahoma; and

WHEREAS, the OSMA feels that substantial progress has been made in the extension of medical care, application of clinical techniques, and support of the rehabilitation process including vocational training and selective placement of the disabled in kinds of work suited to physical and emotional capacity; and

WHEREAS, the OSMA continues to believe that the present system of utilizing medical testimony in making disability determination creates an undesirable and harmful situation



for the injured working man, and likewise exerts subtle pressures on the physician, both pro and con, which tend to influence frequently his judgment in making disability determinations; and

WHEREAS, this system is wasteful and expensive; and

WHEREAS, many of the abuses in the present administration of Workmen's Compensation Law can be perhaps related to the fact that such laws have been formulated largely without adequate medical consultation or any clear identification of medicine's primary interest; and

WHEREAS, the current plan of the Oklahoma Legislative Council to study the entire Workmen's Compensation Law represents an unique opportunity for the members of the Oklahoma State Medical Association to exert leadership and influence in fulfilling their duties and responsibilities as members of a profession and as citizens in an industrial society toward improving the lot of the injured working man;

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association will exert every effort and will involve its entire membership in support of the study and implementation of this effort for new and creative concepts in the administration of disability aspects of the Workmen's Compensation Law; and

BE IT FURTHER RESOLVED, that full attention and study should be made of various systems in operation in other states, including advisory panels of physicians; and

BE IT FURTHER RESOLVED, that physicians known to be presenting false or dishonest testimony should be acknowledged and appropriate disciplinary procedures should be taken to correct these faults within the medical profession.

BE IT FURTHER RESOLVED, that documented evidence of alleged misconduct by physicians be obtained and presented to the Grievance Committee of the Oklahoma

State Medical Association for investigation.

# Resolution No. 1

(APPROVED)

INTRODUCED BY: Pottawatomie County Medical Society

SUBJECT: Private Practice

(Oath of Hippocrates)

REFERRED TO: Reference Committee No. III

WHEREAS, government medical programs are requesting such information as:

A. "Please advise the name, quantity, strength, and manufacturer's name of each injection."

B. "Were there any unusual circumstances requiring parenteral rather than oral administration of the medication?"

C. "Was any oral medication prescribed for ingestion on the date parenteral medication was given? If so, what and on what dates?"

D. "Has he been a patient of yours prior to this treatment? If so, what was he treated for and on what dates?"

E. "What was his complaint which prompted his call?"

F. "What was the patient's condition which required the injection?"

G. "In order to determine the benefits payable for the hospital care we need the following information:

1. Initial examination and history, including subjective and objective findings.

2. Initial objective and subjective diagnostic findings.

3. Treatment and progressive notes.

4. Other periodic and informative diagnostic notes."

H. "Was it medically necessary to extend your service?"

I. "All Billing should clearly reflect a medical need for each visit, and it is the physician's responsibility to make it clear to the patient that he is responsible for any unnecessary calls."

J. "Standard medical practice dictates medical necessity. It is not standard medical practice to give parenteral administration vs. oral

medication for the entire course of treatment."

K. "The doctor has over-utilized the program"; and

WHEREAS, the government programs do not have a definition of "medical necessity" or "medical need" by their own admission; and

WHEREAS, Public Law 89-97, Section 1801 states:

"Nothing in this title shall be construed to authorize any Federal officer or employee to exercise any supervision or control over the practice of medicine or the manner in which medical services are provided, or over the selection, tenure, or compensation of any officer or employee of the institution, agency or person providing health services; or to exercise any supervision or control over the administration or operation of any such institution, agency or person."

and it is evident that the intent of the law is being disregarded; and

WHEREAS, the government programs, by their own admission, are having non-medical people make medical judgments and decisions:

Aetna Medicare letter dated April 19th, 1968:

"The first decision as to the possible lack of medical necessity is determined by our processor who processes, personally, some 300 claims per week from a random selection of claims submitted. Her determination is not so much one of medical necessity, but experience in processing makes unusual, frequent, services stand out to her as though the claim is submitted on striped red paper."; and

WHEREAS, historically, physicians have considered injections, as well as examinations, and other modality of treatment given in their office a professional service and not a commodity; and

WHEREAS, any attempt to force physicians to separate cost of examination and treatment will force the physician to reconsider his routine charge for an office call; now therefore be it

RESOLVED, that the Oklahoma State Medical Association insist up-



on the Federal and State government and its fiscal intermediaries to carry out the intent of P. L. 89-97, Sec. 1801; and further be it

RESOLVED, that the Oklahoma State Medical Association recognize medical injections in doctor's offices as professional service, and that the term "injection" be the only requirement for an itemized statement, unless the doctor voluntarily gives the information; and further be it

RESOLVED, that the Oklahoma State Medical Association recognize that medical injections are only another modality of treatment in the art of the practice of medicine, and only the attending physician is qualified to evaluate the value of the injection; and further be it

RESOLVED, that the Oklahoma State Medical Association consider laboratory tests as a medical service and not a commodity, and that the charges for medical laboratory should be the usual and customary charge of the attending physician, and further be it

RESOLVED, that the Oklahoma State Medical Association reaffirm its policy of opposing any type of fee schedule for physicians, and further reaffirm its policy that whenever the third party does not pay the usual and customary fee the doctor shall have the right to collect that part not paid by the third party from the patient; and further be it

RESOLVED, that the Oklahoma State Medical Association oppose any attempt at standardization of the practice of medicine by any means the third party attempts to bring this about; and further be it

RESOLVED, that the Oklahoma State Medical Association recognize that some patients have in the past, and shall always, overutilize medical services, and that the doctor cannot determine if medical service is

needed until an examination is done; and further be it

RESOLVED, that the House of Delegates of the Oklahoma State Medical Association establish the Board of Trustees of the Oklahoma State Medical Association as a committee of one, and call it "Private Practice Committee," and it shall be its function to investigate all infringement of third parties upon the private practice of medicine; and further be it

RESOLVED, that a complete copy of this Resolution be sent to every doctor in the state calling to their attention the formation of such a committee.

#### OATH OF HIPPOCRATES

I swear by Apollo, the physician, by Aesculapius, by Hygeia, by Panacea, and by all the gods and goddesses, calling them to witness that according to my ability and judgment I will in every particular keep this, my oath and covenant: to regard him who teaches this art equally with my parents, and to share my substance, and, if he be in need, to relieve his necessities; to regard his offspring equally with my brethren; and to teach his art if they shall wish to learn it, without fee or stipulation; to impart a knowledge by precept, by lecture, and by every other mode of instruction to my sons, to the sons of my teacher, and to pupils who are bound by stipulation and oath, according to the law of medicine, but to no other.

I will use that regimen which, according to my ability and judgment, shall be for the welfare of the sick, and I will refrain from that which shall be baneful and injurious. If any shall ask of me a drug to produce death, I will not give it, nor will I suggest such counsel. In like manner I will not give to a woman a destructive pessary.

With purity and holiness will I watch closely my life and my art. I will not cut a person who is suffering from a stone, but will give way to those who are practitioners in this work. Into whatever houses I enter, I will go to aid the sick, abstaining from every voluntary act of injustice and corruption, and from lasciviousness with women or men—free or slaves.

Whatever in the life of men I shall see or hear, in my practice or without my practice, which should not be made public, this will I hold in silence, believing that such things should not be spoken.

While I keep this, my oath, inviolate and unbroken, may it be granted to me to enjoy life and my art, forever honored by all men; but should I by transgression violate it, be mine the reverse.

#### Resolution No. 2 (APPROVED)

INTRODUCED BY: Samuel R. Turner, M.D., Trustee

SUBJECT: Commendation to Miss Lottie Shepherd and the Shepherd Foundation

WHEREAS, the Shepherd Foundation has established a loan fund at the O.U. Medical School for students in need of financial assistance for medical education; and

WHEREAS, the Shepherd Foundation has given approximately \$80,000 in the past to this fund; and

WHEREAS, only yesterday the Shepherd Foundation gave another \$20,000 to this fund, making a total of approximately \$100,000;

NOW, THEREFORE, BE IT RESOLVED, that the Oklahoma State Medical Association goes on record as acknowledging this contribution and thanking Lottie Shepherd and the Shepherd Foundation for this generous gift.



# STANDARD CLAIM FORM

APPROVED BY THE OKLAHOMA STATE MEDICAL ASSOCIATION AND THE ASSOCIATION OF HEALTH AND ACCIDENT INSURORS OF

INSURANCE COMPANY ADDRESS

TO:

## ATTENDING PHYSICIAN'S REPORT

1. PATIENT'S NAME

2. ADDRESS

4. DIAGNOSIS (EXPLAIN COMPLICATIONS)

5. ADDITIONAL DIAGNOSES (CHRONIC DISEASE OF DEFECT FOUND DURING PRF)

6. DATE OF ONSET

7. DATE FIRST CONSULTED

8. DUE TO PREGNANCY

☐ YES

☐

11. SURGICAL OR OBSTETRICAL PROCEDURES (DESCRIBE)

12. IF HOSPITALIZED, NAME AND ADDRESS OF

15. NAME AND ADDRESS OF OTHER

COMPLETE IF PATIENT

16. TOTAL DISAP

FROM

17. P

PLEASE ATTACH TO COMPLETED INSURANCE CLAIM FORM

# STANDARD INSURANCE REPORTING FORMS For Oklahoma Physicians

## STATEMENT FOR PROFESSIONAL SERVICES RENDERED

APPROVED BY THE OKLAHOMA STATE MEDICAL ASSOCIATION

PHYSICIAN'S NAME

PATIENT'S NAME

ADDRESS

COMPLETE FOR MEDICAL CARE ONLY: AT HOSPITAL, HOME, OR OFFICE  
GIVE THE DATES OF TREATMENT BY INSERTING MONTH AND YEAR. INDICATE EACH  
H—HOSPITAL V—HOME O—OFFICE OR CLINIC

MONTH AND YEAR	1	2	3	4	5	6	7	8	9	10	11	12

PLEASE STATE YOUR

HOSPITAL

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6 Pads . . . . 3.75  
(300 Forms)  
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(600 Forms)

SAMPLE FORMS  
SENT ON REQUEST

### Form 102

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Signature

Address

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O S M A  
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★

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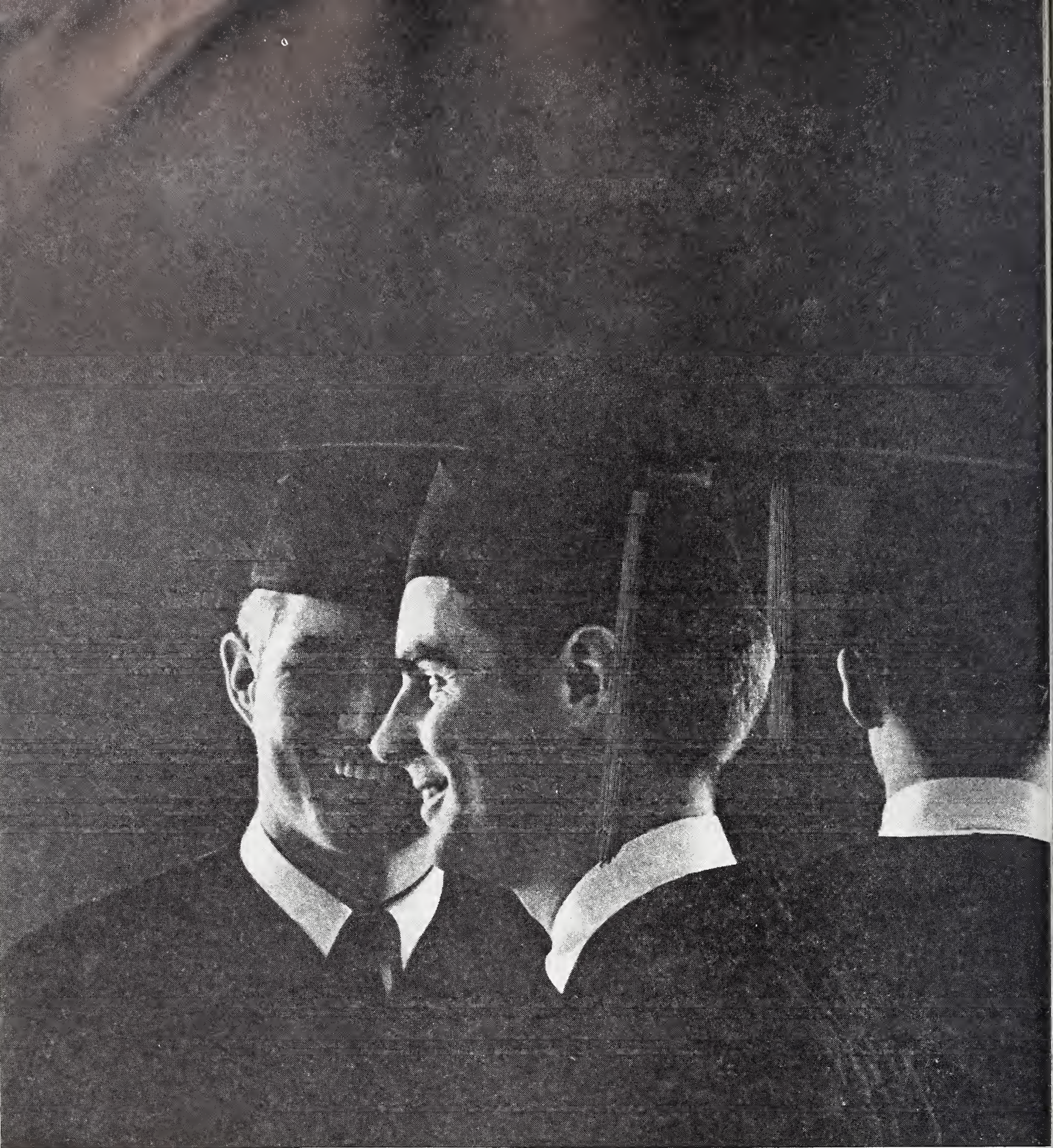
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**Warning:** Clinical reports have suggested that there may be a risk of teratogenesis associated with the use of this compound during the first trimester of pregnancy. Unless, in the opinion of the prescribing physician,

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thyroid patients and in patients receiving thyroid medication when this compound was added to the regimen.

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The drug is not recommended present time in patients under 16 years of age.

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## C. B. Dawson

AUGUST 19, 1919 - JUNE 6, 1968

Clarence Benton Dawson died in Mercy Hospital the morning of June 6, a victim of the inevitable complications of a rapidly growing oat cell carcinoma of the lung. His terminal illness was mercifully short. With characteristic determination he had carried out his professional endeavors up to within three weeks of his death.

Doctor Dawson leaves his widow, Patsy Dawson, and six children. The eldest child, a daughter, is married. The remaining children, varying in age from 11 to 17, live at home.

For the record, Doctor Dawson was born in Sallisaw, Oklahoma, and received his M.D. degree from the O.U. School of Medicine. He interned at Augustana Hospital in Chicago and was the first resident in Urology at the University Hospital in Oklahoma City. He was a Diplomate of the American Board of Urology, a Fellow of the American College of Surgeons, and a member of the American Medical Writers Association. He was also the co-author of a soon to be published text book, *Current Problems in Urologic Investigation*. Doctor Dawson was a contributing author to *Urologic Surgery*. For many years he had served on the Advisory Committee to the Department of Urology at the O.U. Medical School and was recently appointed Clinical Professor of Urology. One week before his death, Doctor Dawson was installed as President of the Oklahoma State Urological Association.

He had served as Editor-in-Chief of *The Journal* of the Oklahoma State Medical Association since June, 1962.

All who knew Bent Dawson were impressed with his professional knowledge and technical skill, but most of all we remember him for his kindness and compassion. An editor necessarily has lots of problems and lots of people to try and please. Doctor Dawson heard them all out. His was a remarkably logical and analytical mind and his interests were varied. It is remarkable to recall that this knowledgeable doctor was an expert in the plant world and had three best-of-show awards for his Iris plants, which he grew on the five acre grounds of his home.

The trouble with men like C. B. Dawson is that you grow to take them for granted, and it is only when they are taken from you that their selfless endeavor through the years becomes suddenly so crystal clear. We extend sympathy to the Dawson family, bereft of a most understanding father. We will all miss this gentle, scholarly man who made the world a little brighter as he passed this way.



## Medicine and Religion

THIS WAS the year that the heart transplant became fashionable. This was also the year that more than 100 physicians and clergymen met for a program searching for new solutions to problems facing the whole man in a world of changing morals. This is a program long sponsored by your medical association under the direction of the Medicine and Religion Committee.

These are disturbing times. It is disturbing to know that our profile is now on the computer tapes for Medicare, the Department of Public Welfare, Blue Cross, etc. The time is here when physicians are to be constantly monitored—politically, educationally, and professionally. Bits of biological wonders are being stored on magnetic tapes and discs. These electronic devices are stated to provide "impersonal accurate data" and to uncover pathology "scientifically." Interested physicians know that this is the time for human warmth, empathy, and personalized attention in the practice of medicine. Historically, it is the great religions which develop a comprehensive knowledge of the whole person without losing sight of one's uniqueness. Your Medicine and Religion Committee is developing new programs to develop stronger and tougher ties with the religious groups.

These are the times when we can no longer sit around and long for the old days when mothers had their daughters vaccinated in places they wrongly thought would never show and juvenile delinquency was smoking corn silk down behind the barn. This is a time when drugs are needed to color the drabness of the emotional scene. The healthiest people about us are the neurotics. The rest are worse. The clergyman is needed in the relieving of distress.

The citizens' right of access to quality medical care is being implemented with and without our aid. The costs of medical care are being tackled by conferences, legislation,

budgeted monies plus federal and state regulations.

DNA has been synthesized and all around us there is discussion of the creation of living organisms. Does all of this mean, then, that man is only a piece of matter?

There are other problems. The youth of today are elusive and different. No society before us has produced such varieties of youth. The behavioral scientists among us have identified the new left and the hippies. And then there are the drop outs, the stay ins, hawks and doves, uptights and cools, radicals and conservatives, heads and seekers. No other age's youth has experienced the affluence, the social change and—yes, the violence. The identity of the various groups is fluid and intermediate. The time has come for every physician to get involved; indeed, the time has come for every physician to become an activist in the sea of turmoil in today's societal events.

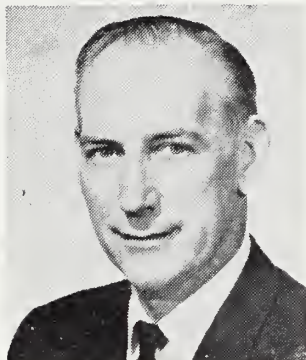
Sit-ins, freedom rides, dialog, be-ins, love-ins, teach-ins have become the vogue of the day. There is a great hunt for understanding; there is great impatience with those who act without understanding. The academic group is pushed about by the "anti-intellectuals." The progressive and the liberal are in.

Medicine is in the act and part of the act. With the Pill, sexual expression became possible outside of marriage. Sexuality became less laden with guilt and fear. Promiscuity is seen to be on the increase. Sex is deemed to be right and natural between people with establishment of strong interpersonal relationships. Marriage is seen simply as an institution for having children.

The problems of medicine and religion begin to focus as one. What and when is death? Does a man have a right to die in dignity? Is a patient really alive when he has no consciousness, no use of any part of his body, and is literally festooned with tubes that medicate him, feed him and remove his waste. To what extent should a physician take extraordinary measures to maintain a tiny spark of life in what is essentially a vegetable, in which that spark can never grow into even a tiny flame? The answers are not easy ones and we do not presently have them in our possession. Cardiac trans-

Continued on Page 381





There is considerable evidence to support a contention that the Congress of the United States can be a fallible instrument at best.

The citizens have, throughout history, had some reassurance that ill-advised legislation, through checks and balances and through public scrutiny, would not survive as law.

It is with considerable dismay, therefore, that we begin to realize the degree to which Congress is abdicating its responsibility and giving up its constitutional power by allowing the intent of legislation to be completely reversed by the promulgation of rules and regulations by various governmental bureaus. This "Legislation By Regulation" allows a law passed by Congress to end up as something entirely different than that intended by the original legislation.

This situation is especially pertinent to the plethora of health legislation emanating from the 89th and the 90th Congresses, but is not limited to health.

For example, one can in these United States, manufacture whole meat weiners, advertise them as whole meat weiners, sell them as whole meat weiners to a public who buys them for whole meat weiners, and yet they may contain 25 per cent chicken.

The "regulations" say that this is possible! The law didn't say anything of the kind.

With an example such as this, can it be possible that confusion and misdirection can exist in the implementation of health legislation?

Let's ask our Congressmen!

Sincerely yours,

*Scott Hendon, U.S.*



## The Predictable Clinical Expressions of Coexisting Primary Osteoarthritis and Gout

WILLIAM K. ISHMAEL, M.D.

*Coexistence of primary osteoarthritis  
with gout or diabetes is capable of  
provoking over 50 clinical syndromes  
in some of these patients' lifetimes.*

**P**PRIMARY GOUT as well as the occurrence of hyperuricemia has been recognized as a familial disorder for many years. Diabetes mellitus also has long been regarded as a family-linked disease.

Primary osteoarthritis (Heberden's nodes) also has been reported as a familial disease in 1951 by Stecher.<sup>1, 2</sup>

In 1945 we postulated that there was familial relationship between gout, diabetes mellitus and obesity.<sup>3</sup> More recent observers have noted the familial relationship of gout and diabetes<sup>4, 5, 6, 7</sup> also and have reported the capacity of an individual to exchange one of these clinical syndromes for the other.<sup>4, 5</sup> In our patients with gout approximately ten per cent<sup>8</sup> have coexisting clinical diabetes and a larger percentage have an impaired glucose tolerance.

From the Arthritis Clinic of the University of Oklahoma Medical Center and Arthritis Section of the McBride Clinic, Oklahoma City.

Recently we reported data<sup>9</sup> supporting the postulation of a familial relationship between symptomatic, primary osteoarthritis (Heberden's nodes), motion sickness, migraine headaches, an impaired capacity to sleep and gastrointestinal disturbances.

A capacity for these syndromes to be interchanged throughout the patient's lifetime was noted also. A relationship between motion sickness and migraine was reported by MacNeal, *et al.*,<sup>10</sup> and Graham<sup>11</sup> in 1957.

This report explores the proposition that some individuals who have inherited both primary osteoarthritis and gout (and/or diabetes mellitus) may exhibit many of the complaints and syndromes theoretically possible with these two disorders throughout their lives.

The clinical manifestations of classical gout are well known. Episodic, severe peripheral joint attacks which subside completely between exacerbations in a man past 40 characterize this disease. The presence of tophi, musculoskeletal deformities, urinary tract disease, increased social mobility and intelligence<sup>12, 13, 14</sup> also are easily recognized.

"Neurotic" behavior may also be a predictable manifestation of gout. Wallace<sup>15</sup> recently emphasized the difference between the pain of acute gout and other arthritides. He described the patient with gout as "morose, querulous, irritable, irascible, choleric,



and cantankerous." He quotes Duckworth,<sup>16</sup> ". . . irritability of temper is a proverbial condition in the gouty." He felt that furious emotional outbursts at times appear to be a metamorphic substitution for more overt and regular attacks. Ellis<sup>17</sup> is quoted as suggesting that gouty men of genius were frequently eccentric and occasionally insane.

Less easily diagnosed, however, is gouty arthritis of the spine and sacro-iliac joints.<sup>18, 19, 20, 21, 22, 23</sup> Patients with gout who have disease activity of the cervical spine are prone to have persistent headaches. And many are relieved by control of their gout.

Also difficult to recognize is the syndrome of mental retardation manifest by some children with hyperuricemia,<sup>24, 25, 26, 27</sup> as well as the existence of clinical gouty arthritis in premenopausal women. A number of these characteristics and findings of patients with gout are listed in chart No. 1.

Clinically diabetes mellitus may be manifest in an almost infinite variety of ways. Its capacity to involve the vascular structures places this disorder in nearly all body systems and its ability to interfere with the many physiological processes are so variable that many of the disturbed pathways are still unknown. As an example, a recent review of the dermatologic phenomena associated with diabetes by Muller<sup>28</sup> lists approximately 25 disorders of the skin attributed to or associated with diabetes. Apparently, some of these clinical expressions may appear before clinical diabetes is apparent.

Likewise the syndrome of hyperostotic, ankylosing spondylosis is probably an expression of diabetes affecting the spine.<sup>29</sup> Some of the more frequently encountered disorders occurring in diabetes mellitus are listed in chart No. 1.

Obesity is frequently present in subjects with diabetes and gout; it is also a problem in their families.<sup>3, 6</sup> The birth weight of these individuals also tends to be greater than average.

Primary osteoarthritis is associated with numerous predictable syndromes even though the cartilage involved by this disease is limited primarily to the spine, distal interphalangeal joints of the fingers (Heberden's nodes), and knees. The hip (malum coxa senilis), the carpometacarpal joint of the thumb (deQuervain's disease if teno-

synovitis of extensors of the thumb is present), the sternoclavicular joint, the bunion joint (hallux rigidus) are notable exceptions. Severe involvement of the proximal row of interphalangeal joints<sup>30</sup> of the fingers is termed "erosive osteoarthritis" (e.o.a.),<sup>31, 32</sup> and may result in some essential crippling of the hand. The episodes of neck and low back pain associated with discogenic syndrome of the cervical and lumbar spines are well known.

Complicating problems found in osteoarthritis include: reflex sympathetic dystrophy ("frozen shoulder," shoulder-hand syndrome, etc.); carpal tunnel syndrome; and the headache, dizziness, and face pain (Barre) syndrome, seen with cervical spine involvement. Sixty-seven per cent of our series reported shoulder-arm pain.<sup>9</sup>

Migraine, motion sickness, gastrointestinal disturbances, a disturbed sleeping pattern, and a constitutional predisposition to sustained emotional stress are probable inherent problems in osteoarthritis and are predictable occurrences during the life of these individuals. Thus, this group of unpleasant episodes may be added to the long list of problems already compiled in this disease. Some of the syndromes and complaints which may accompany osteoarthritis are also listed in chart No. 1. Certainly, primary osteoarthritis is more than a simple aging or wear and tear process.

Due to the absence of diagnostic laboratory and radiological changes, a firm diagnosis of primary osteoarthritis before the appearance of Heberden's nodes can be made only in retrospect, but accumulated experience may permit some predictions<sup>9</sup> in the presence of the clinical syndromes listed above.

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Just as gout may be associated with increased social mobility and intelligence, or brain damage in certain instances, it seems reasonable that the individual with primary osteoarthritis may have predictable personality traits.<sup>9</sup> As children, they are shy, yet inflexible and are prone to have motion sickness, nausea and headaches. These traits are prone to give rise to adult perfectionism, migraine headaches and periods of nausea and "acid indigestion" (colitis, peptic ulcer).

The characteristics of rigidity, resentment, hypersensitivity, ambitiousness and efficiency may be predictably present, and these individuals become upset if anything

is "wrong." Some, especially those with neck pain, are so dedicated to being "right" that they tend to irritate their husband (or wife), and they tend to have defiant children and critical friends.<sup>33</sup> They have insomnia frequently, are impatient with themselves, and are usually strong willed. They have an unusual state of awareness and a constitutional predisposition to sustained emotional stress. Life's unpleasant situations are prone to provoke psychomotor stress reactions (anxiety, depression, irritability, hypochondriasis). Some of the worst stress phenomena, however, follow their pursuing beyond their endurance an exciting or pleasant endeavor. Fatigue to the point of being keyed-up and too tired to sleep leading to

Chart Predictable Clinical Syndromes Possible in Concomitant			
	Musculoskeletal System	Nervous System	Vascular System
Gout and Hyperuricemia	Episodic severe joint exacerbation "Chronic" or tophaceous gout with deformities. Neck and back pain. Tophi Headaches.	Increased intelligence and social mobility. Brain damage in children. Nail biting. Self mutilation.	Phlebitis Atherosclerosis(?)
Diabetes*	Hyperostotic ankylosing spondylitis. Musculoskeletal changes secondary to neuropathy.	Coma Convulsions Neuropathy Painful neuritis Paralysis Retinopathy Blindness. Increased intelligence in children.	Atherosclerosis Coronary occlusion. Strokes Hypertensive heart disease Gangrene ulcers. May involve any system.
Primary Osteoarthritis	Heberden's nodes. Erosive Osteoarthritis, proximal I.P. joints of hands. Cervical tension syndrome, headache, dizziness, neckache, shoulder-arm pain. Lumbosacral syndrome Backache, discogenic muscle spasm, sciatic pain. Knee joint degeneration Malum coxa senilis deQuervains disease Painful shoulder syndrome Temporomandibular syndrome.	Migraine. Motion sickness. Insomnia. Carpal tunnel syndrome. Intervertebral disc syndrome. Predisposition to sustained emotional stress. Disabling psychoneurotic reaction. Hypochondriasis. Anxiety-depression.	Reflex sympathetic dystrophy.

\*see text



even greater fatigue appear to be one of the situations capable of provoking some of the unpleasant clinical musculoskeletal episodes described above.<sup>9</sup>

RESULTS FROM PATIENT INQUIRY

Data from 100 patients with coexisting primary osteoarthritis and gout (or diabetes) are listed in chart No. 2. The long list of complaints in many of these subjects makes it impractical to record all of the information; however, certain data are of primary interest. The observation that 23 of 42 of the patients where data are available are of Cherokee Indian extraction may be misleading since the percentage of the

population of this area who are part Cherokee Indian is unknown. Also, none in this group were "full blood." There is evidence, however, of an increased incidence of diabetes in the Cherokee Indians of North Carolina.<sup>34</sup>

As noted in chart No. 2, an individual who has concomitant diabetes (and/or gout) and primary osteoarthritis may have multiple problems in many systems. He may spend a significant part of his life in pain and be regarded as a neurotic individual with many phobias.

One of the most striking features observed in this group of patients was the presence of hypochondriasis. Fifty-one patients had enough "morbid, undue preoccupation in

No. 1  
Gout and/or Diabetes and Primary Osteoarthritis

Skin	Genitourinary System	Gastrointestinal System	Metabolic Changes	Clinical Laboratory Changes
Susceptible to infections.	Calculi Kidney damage Infections		Obesity Increased birth weight. Lowered resistance to infections. Hypertri-glyceridemia.	Hyperuricemia
Approximately 26 clinical syndrome. (see text)	Nephrosclerosis Miscarriage Polyuria	Gastrointestinal irritability Polyphagia	Ketosis Hypoglycemia Metabolite and water imbalance. Obesity Increased birth weight. Lowered resistance to infections.	Impaired Glucose tolerance. Hyperglycemia. Glucosuria. Ketonemia.
		Peptic ulcer. Irritable gastrointestinal tract syndrome. Nausea Vomiting.		None



their state of health” to be disabled a significant part of their life. There appears to be a familial constitutional predisposition to substitute somatic syndromes and emotional discomfort metamorphically for overt arthritic expressions. It is interesting to speculate on the etymology of the term “hypochondriasis” (subchondral). Individuals with concomitant osteoarthritis and gout have two diseases which are capable of involving the cartilage.

Of the 51 subjects with significant hypochondriasis, 16 could not engage in a useful endeavor due to pain and “nervousness,” and 35 suffered transient disabling episodes of fear. Twenty of the 100 patients had no clinical evidence of hypochondriasis and 29 were sufficiently mild to permit useful function. Some of these subjects may exhibit

numerous syndromes suggesting porphyria when there are multiple surgical scars, neuropathy and intractable pain.

As noted in the child with hyperuricemia, many of these adults exhibit self-destructive traits. When they work, drink, smoke or play, they do so to an excess, sometimes to the point of compulsive determination.

On the other hand, many individuals with Heberden’s nodes, hyperuricemia or an impaired glucose tolerance may be exceptionally capable and free of symptoms. Or they may be considered “eccentric” but brilliant with the disorders listed above.

The history of one of the subjects included in chart No. 2 illustrates how disabling concomitant osteoarthritis, gout and diabetes can be. She has been under observation for 20 years with episodes in her life including motion sickness since infancy and multiple allergic phenomena. She had mi-

Chart No. 2  
Data From 100 Patients With Coexisting Primary Osteoarthritis and Gout and/or Diabetes

Under 50 years of age	27	Disabling psychoneurosis	6
Over 50 years of age	73	Joints other than the spine, fingers and knees	72
Male	38	Serum uric acid over 6 mg%	62
Female	62	Hemoglobin over 16 gm.	59
Motion sickness	44	Hematocrit over 50%	15
Migraine headache	44	Positive rheumatoid factor	9
Peptic ulcer	44	Elevated sedimentation rate	39
Average less than 6 hours sleep per night	45	Elevated A.S.O. titer	9
Cervical tension syndrome	73	L.E. prep positive	2
Lumbosacral syndrome	74	Obesity	46
Painful knees	59	Blood pressure over 150 mm/hg. systolic	38
Heberden’s nodes	100	Family history diabetes	42
Proximal I.P. finger joint involvement	84	Family history arthritis	50
Reflex sympathetic dystrophy	61	Cherokee Indian extraction:	
Carpal tunnel syndrome	2	Yes	23
Clinical gouty arthritis	61	No	19
Tophi	8	No data	58
Impaired glucose tolerance	20	Birth weight over 8½#:	
Diabetes mellitus	19	Yes	17
Hypochondriasis:		No	15
None (within normal)	20	No data	68
Mild	29		
Moderate	35	Known coronary vascular disease	13
Severe (disabling)	16		



graine headaches and bouts of cyclic vomiting since adolescence, and she had undergone 15 major surgical procedures. She could not remember being free of pain, and listed complaints in all areas of her body. Psychiatric consultation and her Minnesota Multiphasic Personality Inventory revealed that she had a high depressive score with both hysteria and hypochondriacal features with some paranoid coloring. Her most persistent complaints included pain in the neck, head, and shoulders, and periodic severe headaches. She also had periods of vertigo and bouts of low back pain radiating into the hips and lower extremities. The abdomen, however, had been the source of countless attacks of pain and accounted for most of her surgical procedures. Hypertension with cardiac involvement developed at the age of 50 followed by a cerebrovascular accident occurring at the age of 68. Clinical diabetes developed at the age of 57; hyperuricemia with transient, severe joint episodes appeared at 60. These were controlled with the daily use of probenecid and colchicine. Heberden's nodes appeared at 40 but they did not become acutely inflamed until she was in her fifties. She was of Cherokee extraction (1/16). Significant laboratory data included negative urine porphyrins, fasting blood sugar of 200 mg per cent, glucose tolerance test one hour 370 mg per cent, two hours 409 mg per cent, three hours 312 mg per cent; all urine samples four plus after the first hour. The serum triglyceride concentration was 233 mg per cent fasting, serum cholesterol 340 mg per cent fasting, and serum uric acid 6.9 mg per cent. She was kept available for teaching purposes inasmuch she readily admitted to almost any complaint mentioned and exhibited "a morbid mental symptom consisting of an undue preoccupation with one's own state of health and a tendency to find evidence of disease from insignificant signs."<sup>35</sup> She apparently met the criteria for a hypochondriac character. She had never been free of hypochondriacal fear; however, her hypochondriacal delusions improved significantly after the diabetes was controlled by diet, weight loss and tolbutamide. There was less pain following the administration of ColBenemid. However, she still had sufficient anxiety to require periodic reassurance, although anal-

gesics and sedatives were no longer needed. The phenomena associated with osteoarthritis improved as she grew older, a tendency frequently observed in a large number of patients with this disease.<sup>9</sup>

#### TREATMENT

Treatment includes the control of gouty arthritis or diabetes when it is present. The patient should be advised of the predictable syndromes of osteoarthritis, be assured that his problems are not "all in his head," and that they may subside spontaneously. Additional help usually results from the prevention of sleep loss and careful explanation of measures to avoid musculoskeletal strain. One may avoid atrophy of disuse by proper general and remedial exercises. A home physical therapy program using indicated measures to complement the exercise is also useful. Many of these patients need periodic reassurance and help in coping with their life's unpleasant situations. Orthopedic surgical intervention is needed occasionally. Local injection of glucocorticoids into painful areas may shorten some exacerbations.

The use of analgesics for pain and agents to retard an accelerated flow of thoughts and ideas at night may be necessary. Dilantin (diphenylhydantoin) is frequently helpful in ameliorating complaints referable to the nervous system. Motion-sickness drugs are effective for the control of nausea, headaches, and vertigo in some patients.

It is difficult for most physicians to avoid patients with these syndromes because they have complaints which embrace most specialties, and so frequently these patients are community leaders and your best friends!

#### COMMENT

Prospective conclusions cannot be drawn from a retrospective analysis of this type. It is interesting to postulate, however, that an individual who has inherited all of these phenomena possible with concomitant osteoarthritis and diabetes mellitus or gout may have many complaints in many systems. Many of these individuals are unusually gifted, capable, and suffer little or none of the syndromes mentioned above, while others may be immobilized by pain and nervousness.



The Greeks had a word for it—"Under the cartilage," (hypochondriasis), a term which may be applied to many chronic complainants with osteoarthritis and gout. They really have two disorders capable of affecting the cartilages. □

Statistical analyses were done by Edward N. Brandt, Jr., M.D.

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# The Current Clinical Status of Ultrasonography

J. KENT CHESNUT, M.D.

*The echoencephalogram is a useful screening device for expanding intracranial lesions. The echocardiogram can detect pericardial effusion.*

## INTRODUCTION

DIAGNOSTIC ULTRASOUND had no clinical usefulness until 1956 when Lars Leksell used the Firestone metal flaw detector in the detection of subdural hematomas. Until this time the success of such an instrument in the head was thought unlikely because of the high attenuation losses of sound in the bone. Nevertheless it did prove useful and since then there has been an ever growing interest in its application to diagnostic medicine, not only in the head but in every other part of the body. The most successful applications to date have come from the use of the pulse-echo techniques where a short (one microsecond) pulse of high frequency (2.25 megacycle) sound is emitted by a piezoelectric transducer and the returning echo of this sound

is recorded in terms of time. From this time (with the velocity of the sound known) the distance of the reflecting echos from the transducer can be determined. This procedure is widely known as an A scan (or amplitude modulation) recording. Today, numerous modifications of this basic recording method are used for various clinical and research problems.

Ultrasound can be transmitted directly through tissues and its arrival time at the other side measured accurately. When this is used with echoencephalography it offers a convenient reference midline since it takes exactly one-half the time for sound to be transmitted through a body as it does for it to bounce off the far side and return again. Early medical applications of ultrasound dealt with "through" transmission and attempts were made to measure the attenuation of the sound as it passed through various structures and to correlate this with the density and composition of the material. It was soon found that these measurements were very gross and that resolution was quite poor in comparison with x-ray because of the relatively long wavelengths of ultrasound. Clinical echoencephalography is widely used today and, as a screening device for space occupying intracranial lesions, it has found its permanent place. At the University and Veterans Hospitals in Okla-

Presented May 11th, 1967, at the Annual Meeting of the Oklahoma State Medical Association in Tulsa, Oklahoma.



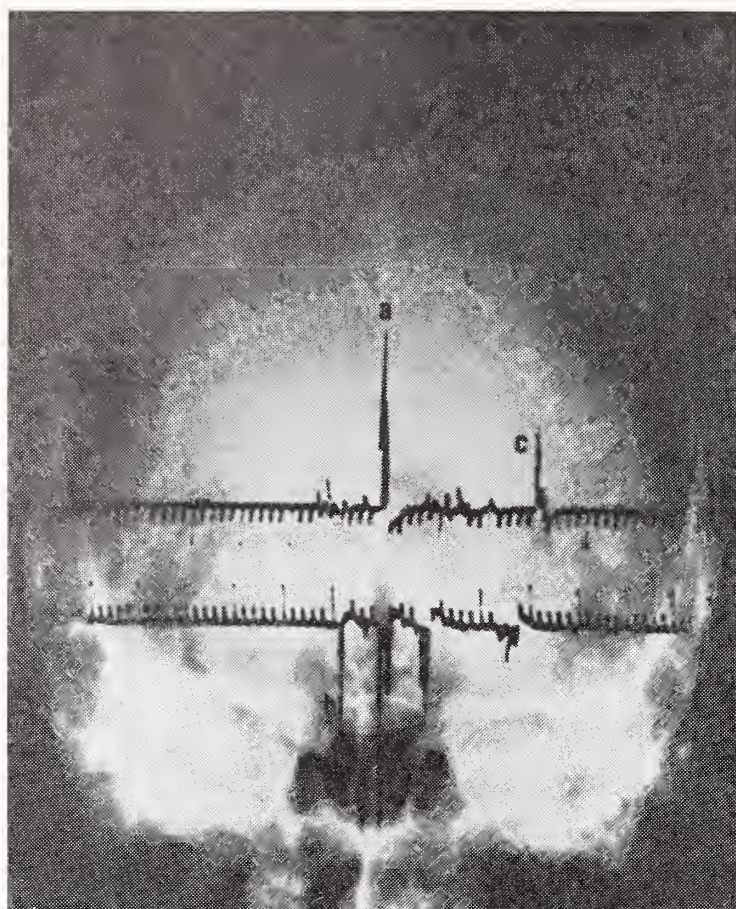


Figure 1. Normal pneumoencephalogram with superimposed echoencephalogram. A. Septum pellucidum, third ventricle and midline echos; B. Cisterna ambiens and echos; C. Insula and echos thought to be arising from it; D. Internal tables of skull and corresponding echos.

homa City over the past three years we have done nearly 1,000 A scans with a high percentage of accuracy.

#### ECHOENCEPHALOGRAPHY

The method of A scan echoencephalography has become fairly standardized (figure 1). The transducer is placed over the temporal squama and recordings are made of the sound reflected from the opposite temporal squama and those reflective structures in between. A through transmission is made with two transducers to establish a theoretical midline. One tracing is made from right to left and is recorded with the amplitude deflections upward. Another recording is made from left to right below this with the deflections downward.

A comparison may then be made of the two sides. In almost every normal patient there are strong and persistent deflections from the midportion of the brain. These vary in number and position slightly (with-

in 3 mm). There is really a complex of three signals arising close together which probably represent septum pellucidum and both walls of the third ventricle. Not all these are recorded at one time on any patient. Other structures will give variable signals and these are on each side of the midline and probably arise from any one of a number of structures. Possibilities include the cisterna ambiens, the temporal horns of the lateral ventricles, and the surface of the brain over the insula.

After one has had the experience of numerous examinations, echoencephalography becomes a very rapid and dependable clinical tool. An intelligent technician can be trained to perform the examination after the radiologist himself is familiar with it. Only the difficult or unusual results then need be checked. Also, after doing a few, it soon becomes evident to the operator that if the patient is normal the examination is easy to perform. "Place the transducer on the head and there is the midline"—that is all there is to it. If, however, the patient has some intracranial pathology, be it shift or

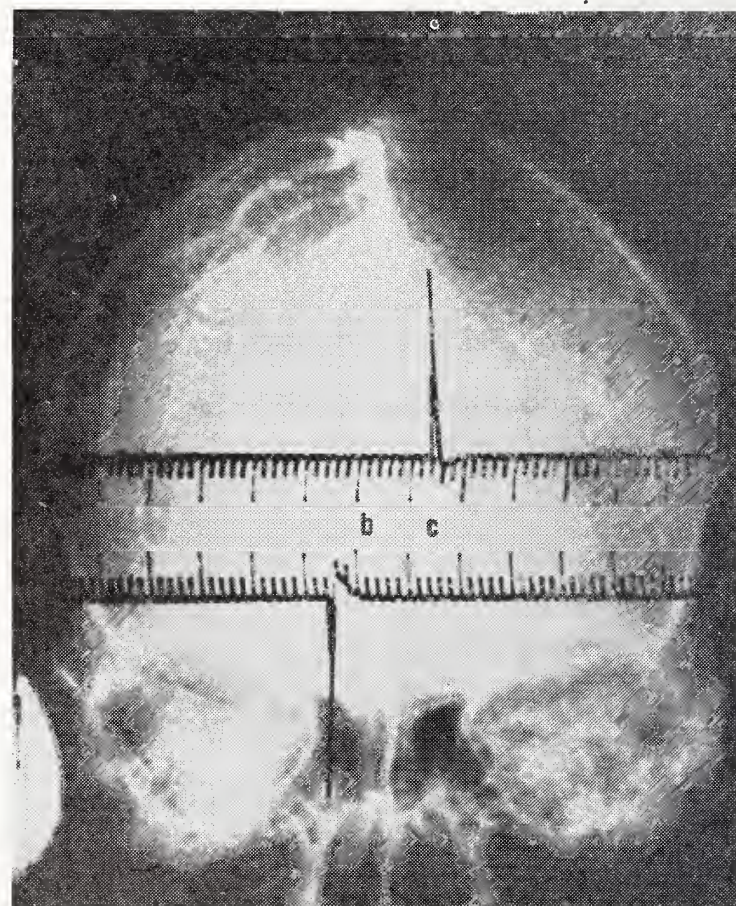


Figure 2. Cerebral angiogram (venous phase) with superimposed echoencephalogram. A. Space occupied by subdural hematoma; B. Midline calcification in the anterior edge of the tentorium cerebelli. C. Shifted internal cerebral vein and corresponding echo shift.



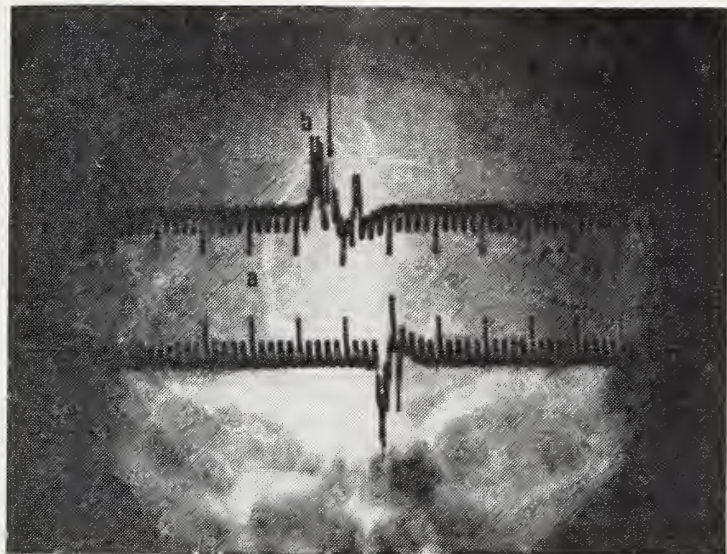


Figure 3. Cerebral angiogram (arterial phase) showing large left frontal meningioma. The (A) anterior cerebral artery is shifted much more than the (B) midline on the echoencephalogram.

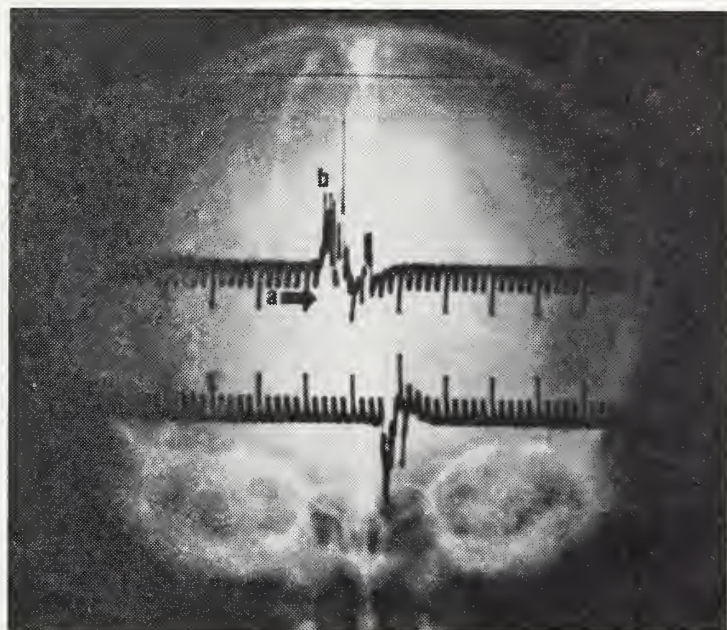


Figure 4. Same patient (venous phase). The (A) internal cerebral vein is shifted the same amount as the (B) echo midline.

dilatation of the third ventricle, the first thing to be observed is that the central echos are not so easy to obtain. The transducer must be rocked back and forth, the gain settings must be tuned, etc. When this is the case it usually indicates pathology whether or not the examiner is able to obtain a nice, clean record showing X mm of shift.

The echoencephalogram is much more accurate than skull films in determining shift of the midline. There is only about 50 to 70 per cent calcification of the pineal in older individuals. The echoencephalogram should be able to determine the midline in 98 per cent of people. Figure 2 is a good example. This woman came into the University Hos-

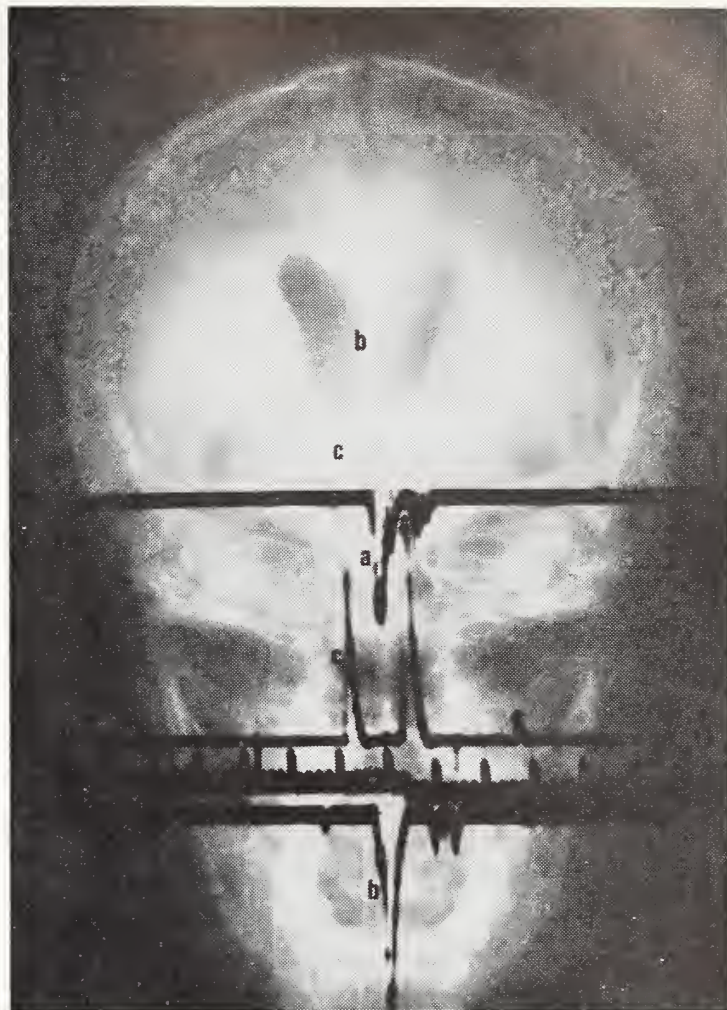


Figure 5. Pneumoencephalogram with superimposed echoencephalogram showing ventricular dilatation. A. Theoretical midline echo; B. Septum pellucidum and corresponding midline echo; C. Dilated third ventricle and echos from its walls.

pitals with signs and symptoms of a right subdural hematoma. An echoencephalogram revealed a seven mm shift to the left. The skull films, much to our surprise, revealed a midline pineal (or what appeared to be a pineal on this view). The  $Tc^{99m}$  brain scan confirmed the presence of a subdural hematoma on the right as did cerebral angiography. Note the shift of the internal cerebral vein. Inspection of the lateral view revealed the midline calcification to be too far posterior and too low to be the pineal. It must rest in the mid-anterior portion of the tentorium cerebelli. Subdural hematomas and parietal tumors cause the greatest shift of the midline.

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Figure 6. Lateral chest x-ray with superimposed echocardiogram. Pericardial tap has been performed. A. Echos arising from the pericardium; B. Echos arising from the posterior wall of the heart. The space between A and B represents the thickness of the pericardial effusion; C. Echos presumed to be arising from the anterior leaflet of the mitral valve; D. Echos arising from the anterior chest wall; E. Air in the pericardial site confirming the presence of pericardial effusion.

Tumors distant from this vicinity cause little or no shift of the sonic midline. The following 55-year-old white female (figures 3 and 4) came into the University Hospitals with a history of increasing headaches for several years. Some recent unusual behavior had been observed by her family (inappropriate gaiety) and it was found on physical examination that she had papilledema and anosmia. The echoencephalogram was barely abnormal, showing only a four mm shift to the left. Her plain skull roentgenograms showed chronically increased intracranial pressure and increased size of the middle meningeal arteries. Her brain scan showed a small dense area of up-

take in the right prefrontal area. Cerebral angiography showed considerable shift of the anterior cerebral artery, riding around an olfactory groove meningioma. There was only a slight shift of the internal cerebral vein, correlating nicely with the echoencephalogram. Therefore, a near normal echoencephalogram is no assurance of the lack of a significant intracranial tumor or of bilateral subdural hematomas.

Experience with the use of the instrument may help estimate the size of the third ventricle in many patients, especially hydrocephalics and individuals with cerebral atrophy. Manipulation of the transducer frequently allows one to get reflections from both walls of the third ventricle and thereby determine its width. In this four-year-old girl (figure 5) the echoencephalogram showed an unusual result. Two echos seemed to be arising in the vicinity of the third ventricle but they were separated by a space of 12 mm. On the lower tracing a midline spike was obtained. The lower tracing, in this case, was deliberately taken higher (in the vicinity of the septum pellucidum). Comparison with the ventriculogram showed good correlation with a greatly dilated third

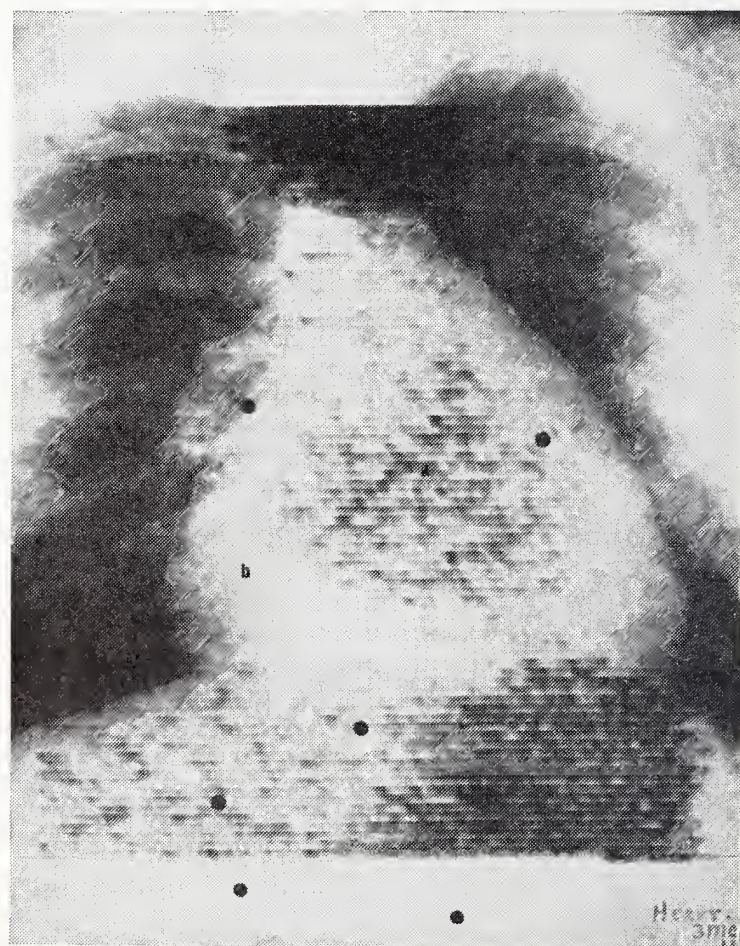


Figure 7. Chest x-ray with superimposed Technetium<sup>99m</sup> heart scan, A. The blood pool; B. Pericardial effusion halo.



ventricle. The cause was a large ependymoma of the fourth ventricle. It is not always so easy to record both sides of the third ventricle. Frequently, when it is enlarged, the walls are quite rounded and the sonic energy tends to be reflected away from the transducer and clearcut echos cannot be obtained. The same may occur in extreme shifts of the third ventricle and septum pellucidum since these frequently are associated with considerable distortion of the shape of these structures.

#### ECHOCARDIOGRAPHY

Diagnostic ultrasound is being used in cardiology. Many structures within the heart are being examined by different research groups. One fairly predictable and accurate clinical examination has been the detection of pericardial effusion. When the transducer is placed on the anterior chest wall (approximately over the fourth intercostal space, just to the left of the sternum) a fairly constant signal can be obtained from the posterior wall of the heart (the left ventricle). On the oscilloscope this echo can be seen to dance rhythmically with the pulse. With a little practice another echo just anterior to this one can be observed which fluctuates with a much wider variation in time and has been found to be the anterior leaflet of the mitral valve.

In patients with pericardial effusion (figures 6 and 7) another signal may be obtained posterior to the signal arising from the posterior wall of the heart which will be seen to be much "quieter" with little tendency to fluctuate in time. It is presumed to be from the pericardium. The distance between the two echos then represents the pericardial fluid and can be quantitated roughly with the severity of the effusion. Here, again, some experience is needed to perform the examination accurately. Spurious posterior echos may be obtained from the pleura, the ribs and even the spine and must not be interpreted as arising from the pericardium.

The above discussion only highlights the clinical applications of ultrasound in diagnostic medicine. It is also being used with increasing success in ophthalmology (for the detection and extraction of non-magnetic

foreign bodies), in general surgery and urological surgery for detection and extraction of soft tissue foreign bodies and renal calculi, and in obstetrics and gynecology for fetal cephalometry and evaluation of abdominal masses.

#### FUTURE APPLICATIONS

A great deal of research is being conducted over the country in new applications; it seems to be headed in two directions:

1. Ultrasound is a physiological tool. The signals obtained electronically can be monitored by time and amplitude analogs and can be improved by computers. Intracranial pulsatile movements, movements of the heart valves, the aorta, the fetal heart, etc. all are being recorded by researchers under various physiologic and pathologic conditions.

2. Ultrasound is a medium for imaging. Current scanning devices are not practical clinically because no information can be obtained that cannot be obtained more easily in other ways. This will be changing however. Already three-dimensional imaging is underway by combining the coherent properties of ultrasound and the laser. This may well be its future and *the* future in radiology. □

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# The Non-Surgical Care of the Head-Injured Patient

OSCAR SUGAR, M.D.

*Most patients with head injury do not require the services of a neurosurgeon. In closed injuries, the most important finding requiring consultation is a worsening of the state of consciousness.*

THE APPREHENSION of the physician who has to deal with a patient who has been hit in the head is well warranted: improper diagnosis and treatment may be disastrous. It would seem obvious, therefore, to turn the care over to a specialist in the field, that is, the neurosurgeon. There are a number of difficulties with this concept, however. First, there are not enough neurosurgeons to go around. Second, even if a neurosurgeon is on the staff of the hospital where a patient with head injury is taken, he may be busy doing something else. Third, neurosurgical attention is not really needed for at least 90 per cent of the patients with head injury. The problem for the attending physician then becomes one of deciding when a neurosurgeon needs to be called.

This decision involves some examination and treatment, at times even before much history is available. It does no good to elicit

a detailed history of the accident and past history of the patient's illnesses and the other details which are conventionally included in the history, if the patient is choking to death from an occluded airway. So there is emergency treatment to be carried out: (1) Insure a patent airway, by position, tracheostomy, endotracheal tube, or any other technic available. (2) Detection and treatment of shock, if present, remembering that for practical purposes, shock in a patient with head injury is due to injury to some part of the body other than the head. (3) Control of bleeding, which is most rapidly done in most cases of external bleeding by pressure dressings or, in the case of scalp wounds, by shaving and suturing the wound while an assistant controls the bleeding with finger pressure along the wound margins. Such temporary control is indicated as an emergency measure even when there is a compound fracture, and sometimes without much shaving or antisepsis, if the bleeding is vigorous. Definitive treatment of the wound may be done later. (4) Care of fractures as an emergency measure, chiefly by splinting or some other form of immobilization.

Then a more leisurely examination of other parts of the body, a more complete history taking, and a plan for action may be done. In the past much stress has been placed on checking the blood pressure, pulse, and respiration, because of the long-hallowed

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concept that a drop in pulse and a rise in blood pressure are harbingers of evil, that these mean a rise in intracranial pressure. And indeed they do, but they are relatively late signs, and when obvious, they may mean that it is too late to do anything for the patient. The most important indication of rising intracranial pressure is a decrease in the state of consciousness. The patient who has been alert and complaining but then becomes drowsy and quiet may be in serious trouble; the drowsy child who resisted examination of the ear canal but now permits repeated visualization of the ear drums without complaint may be developing an intracranial hemotoma; the restless patient who withdrew from a single pinprick and who now winces only slightly on painful pressure in the gap between mastoid and mandible is in impending danger. All of these changes may occur without much change in blood pressure, pulse, or respiration. The so-called vital signs are indeed important, and may even be lifesaving, particularly when the patient is not responsive when brought in and remains that way, but in most patients, the change in state of consciousness is more important. To elicit this, it is conventional to awaken the patient (or try to do so, or at least to give painful stimuli) every 15 to 30 minutes for the first few hours, and then every hour for at least overnight—because that is when there are fewest attendants, and most danger of the patient slipping into coma unobserved. There are other signs of alarm: when the pupils have been equal and reactive to light, and one now becomes dilated and fixed to light; when one or both extremities on one side have been moving and no longer do so; when there have been no Babinski signs and now one appears. It is most unusual however for any of these to occur without an earlier change in the state of consciousness. This encompasses the basic indications for calling a neurosurgeon: change in the state of consciousness, change in pupillary size, change in movement of limbs, change in blood pressure, pulse, and respiration; but the most important of these is a decrease in the state of consciousness.

The other major aspect of head injury which requires neurosurgical attention is the compound, depressed skull fracture. Such patients should be transferred for

neurosurgical treatment, but this may take time, and it should be the responsibility of the attending physician to give the emergency care outlined above: Close the skin to stop bleeding, cover with sterile dressings, and give prophylactic antibiotics.

The nonsurgical care of a patient with head injury may include the problem of patients with bleeding from the ear or nose, or the more complicated matter of leaking cerebrospinal fluid from these locations with or without blood. I urge that you not try to plug the bleeding orifice: This only prevents the escape of blood and does nothing to stop it. In the case of a bleeding ear canal, this practice may hinder the escape of blood from the head, and allow it to accumulate inside which is more dangerous. At times, ear canal plugs may divert blood down the Eustachian tube into the pharynx and lead to vomiting which may be even more detrimental. If it is esthetically unpleasant to see blood accumulate on the bedclothes, one may cover the external ear with gauze dressings, which will absorb the blood. It is of interest that the visualization of the blood on cloth may permit discovery of an admixture of cerebrospinal fluid, when it is present, by differential absorption of blood and fluid, causing a pale pink or colorless halo to form outside the bloody stain. Prophylactic antibiotics (to which the patient is not sensitive, of course!) are indicated with otorrhea and rhinorrhea when it is certain that the bleeding is not due to a fractured nose or a lacerated ear lobe. Par-  
enthetically, when these sources are absent, the finding of blood in the nose and ear canal, especially if cerebrospinal fluid is present too, means there is a basal skull fracture regardless of what any roentgenograms show.

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The subject of roentgenography is an important one. Obviously it is always well to have as much pertinent information about the patient with a head injury as can be obtained, and hence roentgenological studies are important sometimes. That is, it is not essential that roentgenograms be done immediately as an emergency measure. The indication for operation on the head of a patient with head injury is not a skull film, nor a fracture; it is a disturbance of the brain within which threatens the life or well-being of the patient. A patient may have a linear skull fracture without damage to the brain or without a hematoma, even when the fracture line appears to cross the middle meningeal vessel. If the patient is alert, cooperative, and not in a great deal of discomfort, roentgenograms may be taken en route from the emergency room to a bed. I cannot justify this, however, when the patient is restless or in shock, or when his scalp is bleeding actively. The pictures obtained from uncooperative, restless patients are not worth the effort. It is much better to wait a few days, unless there is some specific problem which is important to the neurosurgeon who plans immediate operation (*e.g.*, where is a bullet). The fracture (if any) will not disappear in one or three or even seven days. Furthermore, injuries to the neck are so commonly associated with head injuries that it would be wrong to twist the neck to get perfect films especially in a comatose patient. If examination has indicated flaccid limbs or resistance to neck movements which may mean neck injury, then careful roentgenography with the patient still on a cart can be done, without turning or twisting the neck (by using "across-the-table" techniques).

What is the role of lumbar puncture in the nonsurgical treatment of a patient with head injury? This is a matter of continued debate (for some neurosurgeons) but not for me. Its chief indication is in the patient who is brought in unconscious, with or without scalp laceration, when there is no definite history of injury. Subarachnoid bleeding, increased intracranial pressure, meningitis, even diabetes mellitus, can then be diagnosed. Otherwise, lumbar puncture has little to recommend it in head injuries. The

fluid may or may not contain blood and there still may be a life-threatening subdural hematoma. The fluid pressure may be normal or elevated, and still there may or may not be a hematoma. Neither the contents of the fluid nor its pressure may be of any significance if the lumbar puncture is done in a restless uncooperative patient, for then one may not know whether the raised pressure or the blood is meaningful or not.

Observe that I have said little of funduscopic examination for papilledema: if the patient is quiet, and if the pupils permit funduscopy, examination is worthwhile, providing it does not take too long. If the pupils are small, the information cannot be obtained without mydriatics and the loss of information about pupillary size and reaction is far more important than the presence or absence of papilledema which takes three to five days to develop after raised intracranial pressure begins. If the patient is restless, it is wrong to sedate him for the purpose of funduscopy because then one loses that important guidepost, a change in the state of consciousness. The same stipulation holds for restless patients in general: do not sedate. Bedrails and constant attendance are the best ways to deal with restlessness. However, the current state of personnel shortage and the complaints of patients in neighboring beds may impel some type of drug therapy to quiet the patient. Barbiturates and narcotics are contraindicated; sedatives should be used which permit the possibility of rousing the patient. Traditionally, these have included chloral hydrate and paraldehyde; perhaps more useful are chlorpromazine (Thorazine) and more recently, intravenous diazepam (Valium). One cause for restlessness may be a distended bladder for which catheterization may be useful.

The maintenance of fluid balance may become a problem, especially in children who have been vomiting; intravenous fluids should not be withheld in the hope of reducing intracranial pressure by dehydration. Enough should be given to insure an adequate urinary output (1000 cc per day in adults). Salicylates and external devices to reduce body temperature may be needed when fever is a problem (*e.g.*, water mattress or sponging with tepid or cold liquids). Aspirin, by the way, given rectally, may be



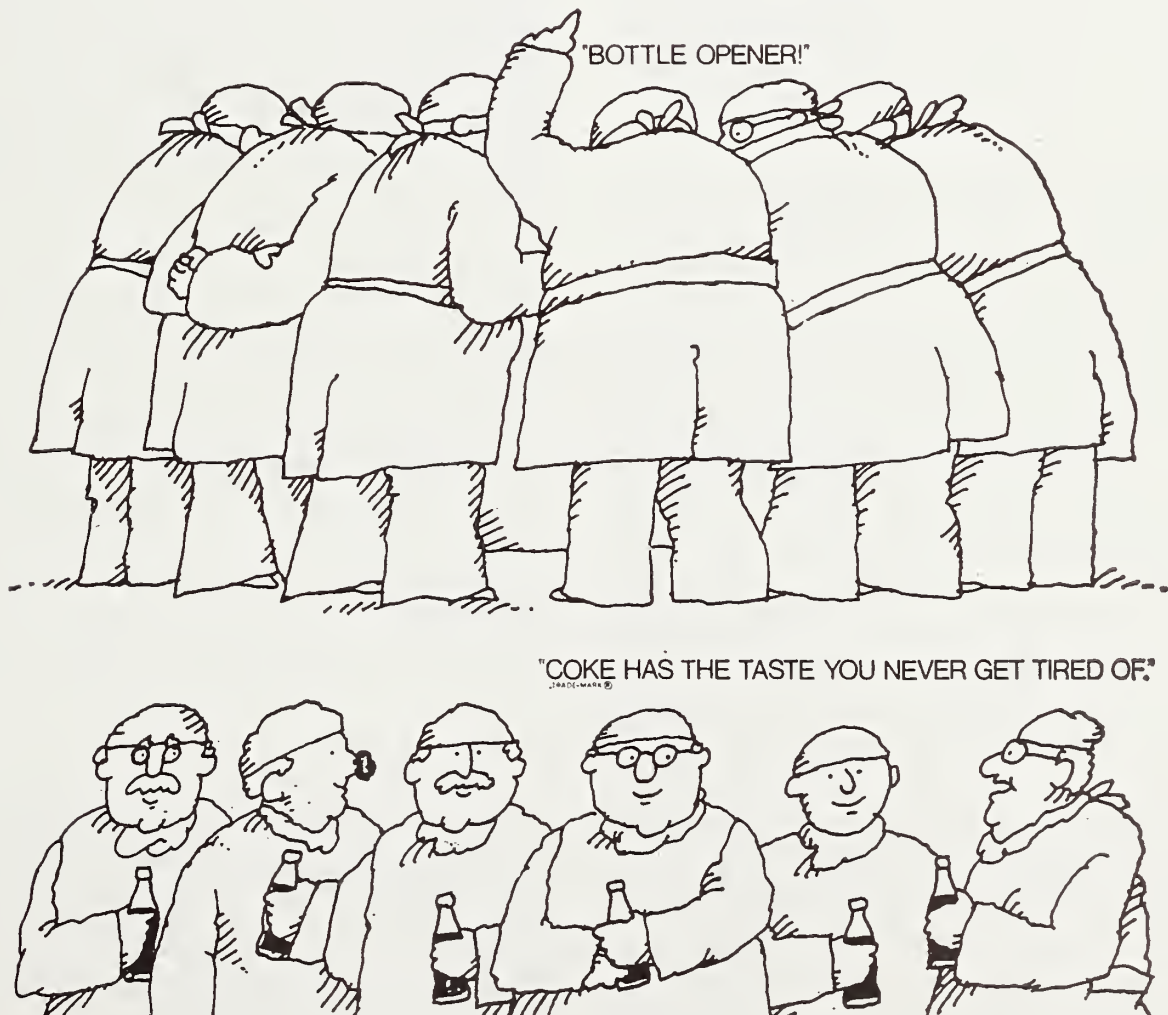
a useful means to combat fever and restlessness at the same time.

Convulsions do occur as a result of head injury (and vice versa), and they must be treated. Here is the exception to the rule of no barbiturates, which may become necessary, along with diphenylhydantoin (Dilantin), which can be given by intramuscular or intravenous routes.

I do not believe that the electroencephalogram or brain scan have a place in the early care of patients with head injury. The EEG is useful in assaying disturbances in cerebral function, prognosis as to sequelae such as epilepsy, and in supporting a medico-legal opinion, but there certainly is no hurry about this test. Brain scanning with radioactive isotopes can help in detection of subdural hematomas, but the scans tend to become abnormal soon after head injury and

hence are misleading. Perhaps the echoencephalogram constitutes the best device currently available to aid in the detection of space-taking masses within the head after trauma, with no injury to the patient and relatively little expense. It is a test which can be repeated frequently, and at times (especially in comatose patients) it may give the clue which directs surgery when clinical signs are not reliable. It is unfortunate that the interpretation of echo-grams requires considerable training, as well as a somewhat expensive apparatus, but the day may come when this machine and someone who can interpret its findings, will be a standard part of any emergency room. It may resolve doubts which, in the past, have given rise to the neurosurgeon's proverb "When in doubt, operate." □

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# Pseudoxanthoma Elasticum,

## Case Report

D. W. McCAULEY, M.D.

*Pseudoxanthoma elasticum, a quite rare entity that involves many areas of the body that involves the ophthalmologist, dermatologist and internist.*

**P**SEUDOXANTHOMA elasticum is a recognizable clinical and morphological entity which may be associated with gastrointestinal and peripherovascular lesions as well as ophthalmoscopic and dermatological lesions. The occurrence of angioid streaks in the retina in association with pseudoxanthoma elasticum constitutes the Granblad-Stranberg syndrome. The retinal angioid streaks may be progressive, cause greatly impaired vision and sometimes blindness. The peripherovascular lesions may lead to intravascular calcifications, a weakened pulse and, many times, hypertension. Hemorrhage from the gastrointestinal tract may result from vascular changes in the mesenteries. The skin lesions vary from barely perceptible roughening in areas of the neck or they may be generalized. The most striking changes are reddish nodules distributed along the natural lines of the skin. These usually occur on the posterolateral aspect of the neck,

the antecubital fossa, popliteal fossa or femoral folds.

CASE REPORT

A 51-year-old white man was treated previously in the Veterans Administration Hospital 14 years earlier where, because of his complaint of loss of vision, examination showed that he had a small patch of central chorioretinitis, bilateral, more severe on the right. He was nearly blind in the right eye and in the left eye he had 20/20 vision. On the original admission, he came in because of a painful right shoulder but he also complained of his vision. The admitting diagnosis was bursitis, right shoulder. He had no skin lesions, no cardiovascular disabilities or any other systemic pathology.

Fourteen years later, he entered the Veterans Administration Hospital again because of a dermatitis on the posterolateral aspect of his neck of about five weeks' duration and a few spots on his thorax between the scapulae. There was no pruritis or discomfort. Physi-

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cal examination revealed a well developed, well nourished, white man. He was almost blind in his right eye and had 20/200 vision in his left. Ophthalmoscopic examination revealed chorioretinitis, bilateral, characterized by angioid streaks in the retina. Examination of the heart revealed no shock, murmurs, or thrills. The lungs were clear. His blood pressure was 152/92. The abdomen and other systems were within normal limits. The skin was roughened on the posterolateral aspect of the neck with fine, reddish nodules distributed along the skin lines. These were soft, chamois-colored papules which had a morocco leather appearance. He had a few streaks on both buttocks. Roentgenograms of the heart and lungs were normal. The electrocardiogram was normal. Serology, urine, complete blood count, and sedimentation rate were normal. During this hospital stay, his blood pressure varied from 140 to 160 mm Hg. A biopsy of the lesions on the posterior aspect of his neck was done. Microscopic examination revealed sections of skin with the overlying epidermis intact but slightly atrophic. There were numerous collagen fibers as well as bands of fibrin consistent with elastic tissue. Elastic tissue stains showed large bundles of elastic fibers. The histologic diagnosis was pseudoxanthoma elasticum. His course in the hospital was uneventful and he was discharged three weeks after admission.

Pseudoxanthoma elasticum was described for the first time in France in 1884. Doyle, in 1889, first described the angioid streaks. Association of the skin disorders and eye pathology stimulated research and the disease was later linked with certain peripheral vascular disorders.

There is no effective treatment for this disease. Symptomatic measures for hypertension, congestive failure, subarachnoid and gastrointestinal hemorrhage are indicated and occasionally plastic surgery is done for cosmetic reasons. Complete blindness may occur but this is quite unusual. Blindness usually results either from glaucoma, vitreous hemorrhage, or retinal detachment. The life expectancy is decreased mainly because of the tendency to cerebrovascular accidents, internal hemorrhage, or cardiac disease. □

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#### SYMPOSIUM

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# Programmed Instruction: Its Use in Medical Education

KENNETH K. FAULKNER, Ph.D.

*Programmed instruction—a boon or a bane? Although its full significance in medical education must await further evaluation, its users are offered many benefits which are missing in traditional methods alone.*

PROGRAMMING is the process of “arranging material to be learned into a series of sequential steps; these steps usually move the student from a familiar background into a complex and new set of concepts, principles, and understanding.”<sup>44</sup> Programming is not a new concept, but has been an essential characteristic of education for thousands of years. Socrates used the method of questioning his students, leading them through a series of facts from a known area into a new, more involved area of learning. The tutorial method so characteristic of English universities depends to a great extent on the process of programming what the tutor wishes the student to learn. Today, the manner in which educational courses are organ-

ized, textbooks are written, audiovisual aids are utilized, and tests are given, depends upon the quality of programming. Competent programming makes good instruction successful.

In the past ten years, literally millions of Americans have been introduced to programmed instruction, either through a type of programmed textbook, or a mechanical device called “the teaching machine.” Programmed instruction has been acclaimed the most revolutionary trend in education since the introduction of the textbook. Many companies involved in publishing educational material employed numbers of “programmers” to program almost every subject, ranging from the pre-school area to the postgraduate and continuing education fields. Teaching machines of various designs and degrees of mechanical sophistication were put on the market to be used with programmed instruction. This great boon to an uneducated public was accompanied by a financial boom to the programming publishers and teaching machine manufacturers.

## WHAT IS PROGRAMMED INSTRUCTION?

Programmed instruction, programmed learning, auto-instruction—all these terms refer to the same educational concept. As in

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any field of study, there is controversy as to the definition of terms, the qualities and methods of presentation, and the criteria on which many of its values are based. In spite of the variations among programs, the following are common characteristics:<sup>3</sup>

1) The learning process is divided into a number of relatively small steps.

2) At each step, the learner makes an active response to a stimulus and then receives a confirmation or immediate reinforcement.

3) The steps are presented in an ordered sequence.

4) Each learner proceeds at his own pace.

5) The steps are designed so there are relatively few errors, and errors made are immediately identified.

#### METHODS OF PROGRAMMED INSTRUCTION

Programmed instruction or auto-instruction has evolved through the years from the theories and research efforts of many workers. Thorndike and others following him, postulated that the learner, impelled by a stimulus, responds in a way to get to his goal over obstacles.<sup>19</sup> Skinner added that if the learner is "reinforced" after each learning experience, he tends to learn more quickly.<sup>38</sup> Reinforcement means a reward—anything that the learner desires, from a piece of candy to just the knowledge that he has learned correctly.

Skinner first applied these theories to learning in lower animals. By reinforcing an animal with food after it completed a fixed number of responses, he could teach the animal numerous things. The space monkeys and "Enos," the space chimpanzee, were taught by Skinnerian methods.

Skinner and Crowder have led the field of researchers in programmed instruction the past few years. These men have very conflicting views as to the theories involved and the manner in which learning is accomplished.

Skinner is the chief proponent of linear programming. The format of linear programming is as follows: After a very short presentation of new material, the learner is required to emit a response, which is usually the act of writing or selecting a word or

phrase. Then, he compares his response to the correct answer which has been written by the programmer on a following page or is written in the margin, before progressing to the next question or bit of material. If his response matches the correct one, he then feels rewarded (his response is reinforced), and the act is learned. At least 90 per cent of the answers of the learner must be correct, if not, the program is unsuccessful in teaching the material presented.

Crowder is the chief proponent of intrinsic programming. The format for intrinsic programming is as follows: A small amount of material is read and digested. A multiple choice question concerning this material is answered by the student. If it is answered correctly, the learner will be so informed and directed to new information. If it is answered incorrectly, the student is told why his answer is wrong and is directed to remedial information. Wrong answers are not considered too important if, at the end of the programming unit, a test over the subject matter is passed with a high grade.

In summary, "... in linear programming, the student's response is considered to be an integrated part of the learning process, the response is induced in order that it may be rewarded and learning thus occurs." "... in intrinsic programming, the questions serve merely a diagnostic purpose, and the basis of the technique is the fact that the diagnosis so made can be promptly utilized to furnish specific remedial material to the student."<sup>6</sup>

#### THE TEACHING MACHINE

Because the initial programs available to the public were designed to be studied with a teaching machine, the idea became prevalent that all programmed instruction had to be studied in this way. This is not true. A great portion of programmed instruction is completed without the use of machines. The expense, inflexibility, and mechanical instability of the teaching machine have influenced its use.

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Pressey is called the father of the teaching machine. In 1924, he exhibited an automatic testing device which tabulated the student's right and wrong answers to a multiple choice type of examination.<sup>33</sup> In 1930, a self-scoring feedback system was devised.<sup>31</sup> Machines were used for testing and for drill in educational psychology in 1934.<sup>24</sup> These units were considered useful as testing devices, but educators could see less value in them as instructional machines.

During World War II, machines were used by the Armed Forces for teaching the identification of ships, airplanes, submarines, and parts of weapons or machines.

In 1958, Skinner and Holland reported the use of programmed instruction with a teaching machine, in a college psychology course.<sup>39, 40</sup> Students learned more quickly and easily by programmed instruction. In 1959, programmed instruction was used in teaching spelling to elementary pupils.<sup>32</sup> The successful use of programmed instruction in a college logic course and in a high school physics course was reported in 1960.<sup>2, 22</sup>

Prior to 1948, there was comparatively little interest in programmed instruction in the educational field. A survey in 1964 revealed that interest had increased to the point that almost 50 per cent of the colleges and universities in the nation were involved in research in this teaching approach and only five per cent of the remaining colleges and universities indicated that they did not plan any research in programmed instruction in the near future.<sup>35</sup>

In 1967, there were some 3,000 programs published for public consumption apart from some 2,000 used by private businesses and the Armed Forces.<sup>23</sup>

#### PROGRAMMED INSTRUCTION IN MEDICAL EDUCATION

The first report of research in programmed instruction in medical education appeared in 1962. A group at Western Reserve University, using programming techniques in teaching hematology to medical students, reported that these students learned as much as those taught in a conventional manner.<sup>16</sup>

The use of extensive programming in medical education is being investigated at Dart-

mouth University. In 1962, they reported that students using programmed instruction in parasitology learned more basic material in less time than when taught by a conventional lecture-textbook technique.<sup>13</sup>

A survey of medical schools in the United States in 1963 revealed that 15 schools were using programmed materials in their curricula, while 35 were currently undertaking research on or developing programmed materials for use in medical education.<sup>25</sup>

By the spring of 1965, there were more than 25 published medical programs. Many more had been developed by various schools for their own use, and over 60 schools were using programmed instruction in some form and manner.<sup>43</sup>

A look at the current research involving programmed instruction shows clearly that it is being investigated at all levels of medical education. The investigations fall into three types of approaches: 1) studies dealing with the qualities, terms, and methods; 2) studies which attempt to evaluate the various methods which will best aid learning; and 3) studies which compare non-programmed material with programmed material.

There are many instances of programmed instruction being used to teach entire courses in the medical school curriculum. However, it appears that the selection of short, discrete topics is desirable to permit better application of the theories of programming.

In the field of physiology, programmed instruction is being used to study the principles of osmosis and diffusion<sup>36</sup> and also body fluid metabolism.<sup>28</sup> In these studies, the students have been able to learn effectively as evidenced by high post-program test scores and efficiently, as evidenced by the fact that the material could be learned in less time than was needed by the conventional lecture-laboratory methods.

Programmed instruction has been used as a possible supplement to other materials in teaching parasitology.<sup>41</sup> Also, it has been employed as part of a course in genetics for medical students.<sup>17</sup> Although test scores were not improved by programmed instruction in these instances, most students thought the programs were efficient and useful and wanted more programmed medical courses.



In psychiatry, programmed instruction has shown promise as an educational tool. It is thought that this method can be helpful in supplementing traditional methods of teaching in offering an efficient orientation to beginning psychiatry residents or as a review for medical students.<sup>27</sup> It has been used to teach students the skills of interpersonal relationships<sup>34</sup> and also to teach basic psychology efficiently.<sup>8</sup>

In obstetrics and gynecology, programmed instruction has been used in studying the anemias of pregnancy<sup>4</sup> and gynecologic oncology.<sup>47</sup> Students learned as much or more than students who were taught by the conventional textbook-lecture methods. Another study reported that case-oriented programmed instruction proves to be of great value to the student in problem-solving<sup>48</sup> clinical situations.

Programmed instruction has been used to teach students the principles of chest roentgenology,<sup>11</sup> basic physics and principles of diagnostic radiology,<sup>5</sup> and essentials of radiation protection.<sup>9</sup> This method was considered at least as effective as conventional methods, and often achievement by medical students was considered to be greater through programmed learning.<sup>48</sup>

Programmed instruction has been effectively used in teaching students urinalysis techniques.<sup>45</sup> It has also been successfully used, with a teaching machine, in electrocardiography.<sup>30</sup> Students learned as much by programmed instruction as they did by carefully prepared lectures and expressed a preference for the teaching machine instruction to the conventional methods of teaching.

Programmed films are also being investigated as tools in medical education. A film has been produced to teach the mechanics of the muscles of the larynx.<sup>20</sup> Such films are considered to be of great value in teaching various concepts and principles in anatomy. Self-teaching films have been used with success in pediatrics in teaching medical students and house staff the details of neurological and developmental examinations.<sup>29</sup> An instructional film in combination with programmed instruction has been used in teaching autonomic pharmacology to medical, dental, and pharmacy students.<sup>46</sup> Although the effectiveness in learning was

inconclusive, it was felt that this type of presentation may open new doors to the application of programmed instruction in various medical fields.

There have been several current studies which have involved more than one medical school. Students in three schools were taught body fluid metabolism by programmed instruction.<sup>28</sup> Students in six schools studied gynecologic oncology.<sup>47</sup> In both instances, it was found that students learned more effectively and efficiently when programmed instruction was used. In a study involving three schools, investigators using programmed instruction in teaching kidney, water, and electrolyte disturbances, concluded that this method offered no advantage over conventional methods of teaching with regard to higher grades or time saved.<sup>1</sup>

Additional studies have been made using the digital computer as a teaching machine in medical education. The first effort toward "computer-aided instruction" was in 1963 when Entwistle and Entwistle programmed a digital computer as a teaching machine in the instruction of medical diagnosis of fevers.<sup>10</sup> No attempt was made to determine the amount of actual learning with this method, but the students enjoyed the procedure and the limited trials showed that this type of program may be of value in the teaching field. Kirsch also reported using a computer as a teaching aid in a medical training game.<sup>21</sup> Feurzeig<sup>12</sup> and Swets<sup>42</sup> reported programming a computer to teach medical diagnosis. The computer in these instances can be programmed with a number of teaching aids to help the student. He may check the patient's condition, laboratory results, check definitions, or receive help in answering questions. More recently, digital computers have been programmed to teach courses in fundamentals of medical science<sup>15</sup> and differential diagnosis in a conversational mode to beginning psychiatry residents.<sup>14</sup>

Listed in table 1 are the programmed instructional materials which were written for use by the undergraduate medical student. Not listed are several programs which are available from the individual hospital or medical school using the material. Also not listed are programs which are in press at this time.

There are also available, many programs in related areas which may be of interest to



the medical student, *i.e.*, mathematics, psychology, statistics, biochemistry, and various other subject areas.<sup>18</sup>

Reports from faculty and students show that programmed instruction has good general support. In 1964, the Standing Committee on Medical Education of the Student American Medical Association felt that programmed instruction was beneficial to physicians for review and instruction. They recommended that their journal, *The New Physician*, carry monthly installments of programmed instruction as part of complete programs which could be saved for review.

Listed in table 2 are the available programs which can be of special use to practicing physicians. The programmed texts on chest roentgenology and electrocardiography (by Owen), which are included were written primarily for medical students.

The only program which has been analyzed as to its acceptance by medical personnel is, *Allergy and Hypersensitivity*. Over 200,000 copies of this text have been distributed. A follow-up questionnaire was included in the first 50,000 copies of the program. Of those who answered the ques-

tionnaire, 5,500 were in medical fields, (physicians plus 210 medical students), 89 per cent completed the course and 75 per cent found the time spent on this type of review was more valuable than the same amount of time spent on other forms of educational instruction. Over 90 per cent found the course to their liking, thought the course had practical value for them, and expressed a desire to receive other subjects in this form.<sup>26</sup>

If the results of this survey are, in any way, an indication of success, it appears that Sanazaro was right when he predicted that "... the practicing physician, admittedly drowning in a rough sea of literature, will grasp at programmed instruction as if it were a power liferaft complete with compass."<sup>27</sup>

Educators in the paramedical fields have also been alert in bringing programmed materials into their curricula. Several programmed texts have been produced by the United States Public Health Service for medical technologists and other medical personnel which include programs on amebiasis, investigation of food-borne disease, and the use of the jet injector. A programmed text on bones, joints, and muscles of the body is

Table 1  
Programmed Instruction Available for Medical Students

Title	Publisher	Author(s)
A Programmed Approach to the Circulatory System (1963)	Stipes	Sackheim, G.
A Teaching Method and Refresher Course in the Affective Disorders (1964). Out of print.	Geigy	Ingram, I., and Mowbray, R.
Autonomic Pharmacology: The Muscarinics and the Adrenergics (1964)	Saunders	Kahn
Basic Physics and Principles of Diagnostic Radiology (1964)	Year Book Medical Publishers	Cheris, D. and Cheris, B.
Body Fluids and the Acid Base Balance (1964)	Saunders	Christensen, H.
Body Fluid Metabolism (used with Auto-Tutor) (1964)	U.S. Industries, Inc.	Wolf, A. and Crowder, A.
Diabetic Acidosis (1965)	Edlen Research	Kessler, E., Caccamo, L. and Axneer, J.
Enzyme Kinetics (1967)	Saunders	Christensen, H. and Palmer, G.
Examination of the Urine (1967)	Appleton	Weller, J. and Greene, J.
Introduction to Body Fluid Metabolism (1964)	Williams and Wilkins	Wolf, A. and Crowder, A.
Medical Parasitology (1963)	Appleton	Nice, P., O'Connell, J. and Sykes, C.
Medical Terminology: A Programmed Text (1963)	Wiley	Smith, G. and Davis, P.
Neuroanatomy: A Programmed Text (1st Volume) (1964)	Little, Brown and Co.	Sidman, R. and Sidman, M.
pH and Dissociation (1963)	Saunders	Christensen, H.
Refraction (1965)	Appleton	Reinecke, R. and Herm, R.
Renal Function and Renal Failure (1965)	Williams and Wilkins	Berstein, L., et al.
Strabisms (1966)	Appleton	Reinecke, R. and Miller, D.



Table 2  
Programmed Instruction Available for Practicing Physicians

Title	Publisher	Author(s)
Allergy and Hypersensitivity (1963)	Pfizer	Basic Systems, Inc.
An Introduction to Physicians Liability for Battery, Negligence, and Acts of Others (1966)	Pfizer	Educational Design, Inc.
A Programmed Course in Electrocardiography (1964)	Warner-Chilcott	Basic Systems, Inc.
Current Concepts of Thyroid Disease (1965)	Pfizer	Basic Systems, Inc.
Diabetes Control: A Review Course (used with Auto-Tutor) 1963)	U.S. Industries, Inc.	Sierra-Franco and Krosnick
Electrocardiography (1965)	Little, Brown and Co.	Owen, S.
Orthopedic Surgery (used with Auto-Tutor)	U.S. Industries, Inc.	
Primary Arterial Hypertension (1964)	Merck, Sharp and Dohme	Basic Systems, Inc.
Principles of Chest Roentgenology (1965)	Saunders	Felson, B., Weinstein, A. and Spitz, H.
Fluid Electrolyte Balance (in preparation)	Pfizer	
Myocardial Infarction (in preparation)	Pfizer	

available for use by physical therapy students. Similar texts on cavity preparation and impression-making and dental materials have been produced for students in dental science. Programmed texts written for pharmacists include texts on anti-inflammatory agents, cardiovascular physiology, female endocrinology, the nervous system, and the anatomy and physiology of the skin. Programmed instruction written for nurses includes programs on the fundamentals of nursing, anatomy and physiology, basic patient care, and fluid and electrolyte balance. *The American Journal of Nursing* has available several units of programmed material which have appeared in monthly issues. These include units on anxiety, errors in blood pressure measurement, ward management, recognition of internal hemorrhage, and pain.

Lysaught and his colleagues have organized the Rochester Conferences on Self-Instruction in Medical Education. These are national conferences which "advance further communication and exchange among medical colleges exploring the applications of programmed instruction to medical education." The fourth conference was held in June, 1968. More complete information concerning programmed instruction and programs available for medical and paramedical education can be found in the published proceedings of the first two Rochester conferences.

#### WHAT ARE THE BENEFITS OF PROGRAMMED INSTRUCTION?

The benefits of programmed instruction are many fold, both to the student and the teacher.

The student knows exactly what he is learning as he progresses, he cannot progress without giving the correct answers. He can study when his motivation is optimal. He can work alone in his spare time, in any place, at his own pace and without a tutor or teacher. He has a permanent record of his own material. He can learn more effectively, (*i.e.*, he can score higher on examinations), and he can learn more efficiently, (*i.e.*, he can learn the material in less time) than under conventional classroom methods.

The teacher can spend less time in the classroom lecturing on material which can be learned easier by other methods. The teacher can spend more time in direct contact with the student, in seminars, and in small group conferences.

The benefits of programmed instruction in continuing education can be extensive. This approach to learning fulfills all the prerequisites discussed by Dryer in his report of 1962.<sup>7</sup> It allows the practicing physician to choose what he wants to learn or review, in his own time, place, or pace of learning.

Many educators have concluded that the biggest potential benefit of programmed in-



struction to education is that it, in its inquiring, critical way, has made the educator take longer and more frequent looks into the efficiency and effectiveness of all methods of instruction. □

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## ABSTRACTS

### CLINICAL FEATURES OF ADENOVIRAL PNEUMONIA IN AIR FORCE RECRUITS

The clinical features of 12 patients later diagnosed as having adenoviral pneumonia among 92 Air Force recruits hospitalized for pneumonia are reviewed. During the six month evaluation period of this study approximately 0.1 per cent of the basic trainees were admitted with pneumonia. The most common infectious agents were: diplococcus pneumoniae (27 per cent), mycoplasma pneumoniae (15 per cent), adenoviral pneumonia (13 per cent), and unknown organisms (27 per cent).

The presenting complaints were cough and fever in all (12), sore throat (11), rhinorrhea and nausea (9). Other initial symptoms included chest pain, vomiting, myalgia, chills, and headache.

Physical findings included pharyngitis (11), rales and rhonchi (11), and febrile state. Grunting respiration, cyanosis, and friction rub were not observed.

Sputum smears were not helpful, white blood counts varied from 5,000 to 30,000, although two-thirds were less than 10,000. Diagnosis was made in patients with fourfold or greater rises in adenovirus complement-fixing antibodies and negative cultures and other serological studies.

Roentgenographic findings showed feathery infiltrates with indistinct borders, usually in the lower lobes and occasional hilar enlargement. One-third had bilateral infiltrates. The roentgenograms remained abnormal an average of 15 days.

This incidence of adenoviral pneumonia corresponds with other studies. During an epidemic of hospital admissions for pneumonia 80 per cent of such admissions may be for adenoviral pneumonia. Prodromal symptoms may occur four to seven days prior to admission although some have reported symptoms for less than 24 hours in one-third of their cases.—*Carman E. Bloedow, M.D.*

Clinical Features of Adenoviral Pneumonia in Air Force Recruits. R. E. Bryant and E. R. Rhoades, *Am. Review of Respiratory Disease*, 96(4): 717-723, 1967.

### DIETARY THERAPY OF CHRONIC RENAL FAILURE

Today with the increased publicity and dissemination of information concerning renal transplants and long term dialysis programs there has been increased interest and pressure to care for patients with chronic renal disease. The magnitude of this problem is seen when we realize that an estimated 7,000 uremic Americans reach the stage of needing dialysis and transplantation each year. Obviously, existing medical facilities are unable to cope with such a large number of patients and therefore, the majority of such patients must be referred to their physician for terminal

care. For this reason dietary management has received renewed interest.

Low protein high caloric diets have been the standard mode of therapy, but they have never been popular because of unpalatability and monotony. The rationale of this diet has been to maintain an adequate calorie intake while sparing endogenous protein catabolism and supplying essential amino acids. Recently some investigators have shown that uremic subjects receiving a calorically adequate diet and essential amino acids could re-use their own urea for protein synthesis. A group of uremic patients treated with a protein deficient basal diet plus amino acid supplementation showed lessening of uremic symptoms and blood urea nitrogen and plasma urate. Urea clearances and creatinine did not change. In general, patients showing improvement on this regimen had creatinine clearances greater than 3 ml./min./1.73 M<sup>2</sup> body surface area.

A source of the amino acids has been an electro-dialyzed milk whey. Further dietary refinements have been permitted through the use of exchange resins, such as a polystyrene sulfonate. Another new area includes investigation of thirst control, since thirst usually increases as osmolarity increases.

**Reviewer's Note:** This article presents a good review of the palliative dietary approach to uremia which, although an interim measure, has become increasingly important as the problems in renal transplantation are being worked out.—*Carman E. Bloedow, M.D.*

Dietary Therapy of Chronic Renal Failure. Harris D. Riley, Jr., M.D. and James E. Wenzl, M.D., *So. Med. J.*, 61(2): 210-212, 1968.

### RECENT PUBLICATIONS

The *Journal* welcomes the opportunity to list current publications by any Oklahoma physician.

Blind-Ending Branch of Bifid Ureter. D. D. Albers, J. R. Geyer, and S. E. Barnes, *J. of Urology*, February, 1968, Vol. 99, No. 2.

Lack of Dependence and Withdrawal Symptoms in Healthy Volunteers Given High Doses of Tybamate. J. P. Colmore, J. D. Moore, *J. of Clin. Pharmacology*, 7(6): 319-323, 1967.

The End of the Rope: The Role of the Brain in Cardiac Death. S. Wolf, *The Canadian Medical Assoc. J.*, 97: 1022-1025, 1967.

Effectiveness of Doxycycline Treatment in Chronic Urinary Tract Infections. J. P. Colmore, B. Braden, and R. Wilkerson, *Antimicrobial Agents and Chemotherapy*, 118-120, 1966.

Restoration of Cardiovascular Integrity in Post Myocardially-Infarcted Aviation Personnel. M. T. Lategola and J. Naughton, *Aerospace Med.*, 38(10): 1067-1070, 1967.



# Books As Clinical Tools

## CLINICAL REFERENCES ON PEDIATRIC NEPHROLOGY

JAMES E. WENZL, M.D.

Although several diseases of the urinary tract in children and adults share certain similarities, the physician dealing with infants and children encounters a relatively large number of renal and related disorders which are quite different from or do not occur in the adult. Another special problem in pediatric renology is the influence of growth and development. Unfortunately, there is currently no single book in the English language which encompasses the field of pediatric nephrology. The "bible" of adult nephrologists, *Diseases of the Kidney*,<sup>1</sup> edited by Strauss and Welt, is a comprehensive and authoritative reference which is invaluable to the pediatrician or generalist dealing with children's renal diseases. Well referenced and comprehensive, this volume consists of 37 chapters written by 43 contributors. Unlike many multiauthored texts, a cohesive style has been achieved without a stereotyped approach. The chapters on clinical examinations of renal function, renal physiology, renal tubular dysfunction and acute renal failure are exceptionally concise and valuable. The chapter on the nephrotic syndrome is an excellent monograph in itself, but is more oriented toward the adolescent or adult patient in keeping with the experience of the author. Other chapters will prove useful but less valuable to the pediatrician.

For the clinician dealing with genetically determined problems of the renal tubule, the monograph *Renal Tubular Dysfunction*<sup>2</sup> by L. I. Woolf is advised. This small book presents for the first time a clear and orderly classification of the renal tubular diseases, as well as giving excellent clinical descriptions. Although the academician will frequently find the discussions on biochemistry and therapy incomplete, the book is, nevertheless, of value as a descriptive and reference source.

From the Department of Pediatrics and the Children's Memorial Hospital, University of Oklahoma Medical Center, Oklahoma City, Oklahoma.

One of a series sponsored by the Department of Continuing Education, University of Oklahoma Medical Center.

The renal diseases issue of *The Pediatric Clinics of North America*,<sup>3</sup> necessarily not a comprehensive survey of the field, is a rich source of information for both the clinician and the pathophysiologist. The problems of renal immunology, growth failure secondary to renal disease, peritoneal dialysis and pyelonephritis in infancy and childhood are especially well covered. A similar issue of *The Medical Clinics of North America*<sup>4</sup> complements the pediatric issue and contains one of the best clinical discussions of acute post-streptococcal glomerulonephritis available.

For the diseases shared with the pediatric urologist, the nephrologist finds difficulty in obtaining up-to-date reference material in book form. *Clinical Pediatric Urology*<sup>5</sup> by Campbell was a comprehensive volume when written but now it suffers from obsolescence. Campbell's three volume set *Urology*<sup>6</sup> is up-to-date and contains pediatric material, but is primarily written for the urologist whose practice is mainly among adults.

For those clinicians who wish to study their own renal biopsy material, the Ciba Foundation Symposium *Renal Biopsy*<sup>7</sup> is well written and illustrated, but limited in context. Being a symposium comprised of 13 individual papers followed by a general discussion of experimental and clinical renal pathology, the volume suffers from lack of coalescence. A more comprehensive source is now available with the publication of *Pathology of the Kidney*,<sup>8</sup> by R. H. Heppinstall. Although the author's experience is apparently heavily weighted with adult biopsy and autopsy material, many sections of his book are pertinent and useful to the pediatrician. □

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## Bell Testifies Before Insurance Subcommittee

Speaker of the House Rex Privett had asked Oklahoma doctors for advice at the annual meeting and the Occupational Medicine Committee of the OSMA responded on June 28th with a statement delivered by James P. Bell, M.D., Chairman.

Actually, the story goes further back than the annual meeting.

Speaker Privett, in the "windup" days of the 31st legislature, prompted by adverse publicity, introduced a resolution asking for a study of the Oklahoma Workmen's Compensation Act. The interim legislative council appointed a subcommittee to study the "comp" program and asked for testimony from the OSMA as well as others. OSMA President, Scott Hendren, M.D., directed the problem to the Occupational Medicine Committee which met hurriedly to draft a statement.

The following is Doctor Bell's statement:

Mr. Chairman and members of the subcommittee, I am Doctor James P. Bell of Oklahoma City. At the present time I am Chairman of the Oklahoma State Medical Association's Occupational Medicine Committee. In the committee's report at the recent annual meeting of the Oklahoma State Medical Association, we went on record as setting up the following objectives: 1) Promoting and improving occupational health programs. 2) Encouraging and educating the medical profession to provide medical services and direction required for a good occupational health program. 3) Assimilating information about scientific and socio-economic activities of occupational health programs, including *Workmen's Compensation, Rehabilitation, Industrial Hygiene, and the health team approach*. In line with these objectives, this committee was instructed by the President of the Oklahoma State Medical Association to study the physician's role in present-day Workmen's Compensation and to provide the legislative subcommittee on Workmen's Compensation a report of our recommendations.



James P. Bell, M.D.

The physicians of Oklahoma realize the importance of a Workmen's Compensation program which is equitable to the injured worker, to the employer, and to the insurance carrier. We stand behind the principle and philosophy that the injured working man should have the very best in scientific medical care, adequate benefits while unable to work, unending efforts on the part of all parties concerned to speed his rapid return to his regular work, rehabilitation if indicated, and adequate compensation for permanent effects as the result of his disease or injury.

While we are as concerned as you about cost, we believe this aspect should be secondary to the patient's welfare.

Within the past few months questions have been raised suggesting that the cost of providing these Workmen's Compensation services in the State of Oklahoma far exceed similar costs in surrounding states. It has also been stated that possibly the benefits are not in line with the cost of this program. The medical profession is quite aware of the rising costs of medical care, and we are just as concerned as all others that a proper solution be found for this problem—if a problem does exist. The Oklahoma State Medical Association, through its Occupation-

al Medicine Committee, would like to help in any way possible to solve the problem of rising costs of Workmen's Compensation in the State of Oklahoma.

Exhibit A shows a breakdown of the probable components of indemnity and medical payments to injured workmen, as have been shown previously to be a part of the breakdown of the net premium rate. This information has been presented previously to the subcommittee and it has been indicated that indemnity and medical payments to injured workmen constitute 62.6 per cent of the net premium rate. One can see under indemnity payments that these benefits are primarily for temporary total disability, permanent disability, either partial or total, and death benefits. Medical payment benefits would include physicians' fees, hospital costs, drugs, appliances, braces, prostheses, other mechanical aids, and rehabilitation.

First, I would like to speak about indemnity payments and how the medical profession might help in reducing this cost. I would like to again state that the position of the medical association is not one to deny benefits to any legitimately injured working man. We do feel, however, that more effort could be directed toward returning the injured employee to his job at an earlier date and thereby reducing the amount of temporary total disability which is paid.

There is no question but that this is more desirable for the injured workman. The ability to earn a living while being treated for the effects of the injury would, in turn, reduce the economic disaster experienced by so many of our injured workers. This then might very well reduce the amount of final disability payments, in that it would, in many cases, obviate the economic necessity of "attempting to break even on final disability settlements." This,



in turn, might very well reduce the amount of repeated medical examinations, reports, tests, etc., which many times are necessary to determine the amount of a final disability settlement, and thereby, reduce the overall medical cost. Certainly each of you are quite familiar with many employers' statements that handicapped individuals make good employees, and certainly there are many hundreds and possibly thousands of injured employees who could be working productively during the time they are being treated for the effects of their injury. There are implications here which are non-medical, and which work to prevent the injured man from returning to his work until he has been completely released by the attending physician. The medical profession feels that study should be made of this particular aspect of Workmen's Compensation and through education, statute, or otherwise, an environment created where these injured working men can be accepted on the job prior to final release by their attending physician.

The problem of permanent disability awards, as far as the medical profession is concerned, has to do with the function of the physician in the present adversary system. We would like to go on record at this time as stating that the present adversary system might be desirable and necessary as a part of the normal workings of the Workmen's Compensation Law. The medical profession does, however, object to the role of the physician in the adversary system.

We also take the position at this time that we feel that the injured working man is entitled to and deserving of adequate benefits for the permanent effects of his injury, and nothing which we might suggest should be construed in any manner or means as an effort on the part of the medical association to reduce the benefits to which the injured working man is entitled.

The state medical association feels that study should be given to the

problem of the present method of determining permanent disability, and that the physician be relieved of his present role of evaluating *permanent disability*. The physician is a student of science, who is skilled in making scientific judgements and should be allowed, and asked, to render opinions only as to *impairment of function*, rather than opinions as to physical disability.

The present system presumes that all practitioners of the healing arts are equally capable in determining degrees of physical impairment. It is our feeling that opinions should be weighed in light of the educational background, experience, and professional status of the examining physician.

It should be obvious to this committee that there are degrees of competency within any profession. A neurosurgeon with years of education and experience is certainly more qualified to make medical judgements, within his field of study, than say an internist who is just starting his medical career.

Since there has been considerable publicity recently concerning divergent medical testimony before the State Industrial Commission, this committee has studied this problem carefully. We feel that if physicians were asked to evaluate only physical impairment and to make no determination of disability, that this alone might in itself partially solve this particular problem. We would urge also that consideration be given to utilizing the work and studies of national committees on disability evaluation, and particularly guides which are available and which have been published by the American Medical Association and the American Academy of Orthopedic Surgeons.

Both of these guides are for the purpose of determining physical impairment, and do tend to standardize to a great degree functional limitations. We feel that these evaluations of physical impairment can then be utilized by judicial authorities to set disability ratings on the basis of the legal definition of disability at that time.

Secondly, the committee recommends that the legislative subcommittee, along with members of our organization, study the feasibility of establishing a panel of highly qualified physicians to review medical questions before the State Industrial Court which do not seem nor appear to have an agreeable solution at the time. This panel would serve in an advisory capacity to the court. The composition of the panel, the tenure of its members and the cases referred to it would have to be studied very closely. Last year's Industrial Court report indicates as many as 3,000 cases could have been referred to a panel. However, it would seem to us that the application of a peer review system and changing to a physical impairment rating program would result in fewer cases of divergent medical opinions. This committee is quite willing to work with any group in attempting to solve this particular aspect of the administration of our Workmen's Compensation laws.

Moving to the other side of Exhibit A, we are faced with factors which are concerned with the rising costs of medical care. Certainly everyone would agree that physicians' services have increased and will probably continue to increase along with the cost of living. We do not feel that physicians' fees in the State of Oklahoma are out-of-line with any of the surrounding states. We strongly recommend that the use of usual and customary fees continue in operation with respect to the Workmen's Compensation system. We do realize that problems are encountered with respect to physicians' costs, and we do feel that at times justifiable complaints are in order.

Organized medicine in the State of Oklahoma has a very excellent fee review mechanism, and disciplinary procedure, which we feel is fully capable of policing our membership. This service is available to the Industrial Court, to the insurance industry, and other interested parties, and we would strongly recommend that its availability be noted and made an integral part of this study. This committee and the medical profession also recognize that

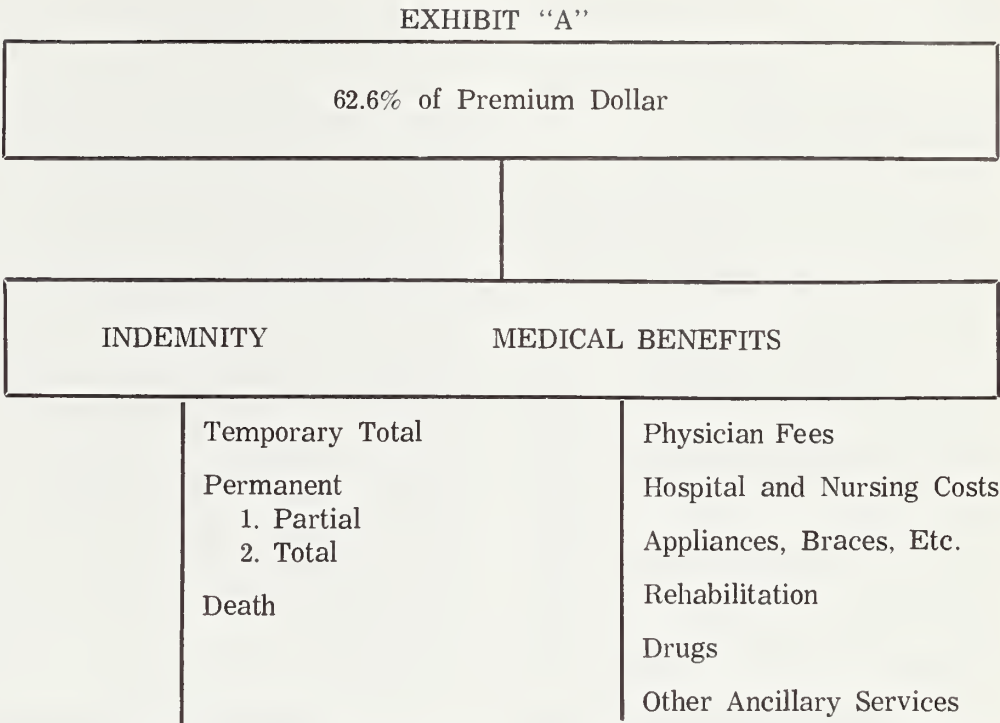


hospital costs are high and that they will continue to get higher; as the costs of all services involved in a hospital unit increase, then certainly the total hospital cost will have to continue to rise. This cost must be reflected and returned to the patient or insurance carrier. The cost of appliances, braces, prosthetic devices ,etc., I am sure will continue to rise, as the cost of living and the cost of materials continue to rise. I have no specific knowledge of the costs of rehabilitation, but assume that they will keep pace with the rising cost of living. In general, one might say that medical costs are high and that undoubtedly we will see some increased cost of providing overall medical care to the injured employee.

There are several generalizations that one might make with respect to increased medical costs, and I think it is important that the subcommittee be cognizant of these factors in their general discussion and review of this problem. Certainly the increased accident rate or incidence of injury is a factor in the rising medical costs. The use of more sophisticated and scientific methods of diagnosis and treatment certainly add, and will continue to add, to the cost of medical care. We would hope that this might be reflected in a decrease in indemnity benefits by more rapid return to work and less permanent disability awards as a result of better results from the medical care.

Another factor which we feel is a part of the overall added cost is the necessary medical expense incurred in the operation of the adversary system. This, many times, requires several different examinations, tests, x-rays and reports, which all tend to add to the total medical cost. Our committee would recommend that study be given to this, to see if there might be some way in which this apparent waste of medical talent and waste of medical dollars might be avoided.

In general, the Occupational Medicine Committee of the Oklahoma State Medical Association would like to make these specific recommen-



dations to the legislative subcommittee on the following problems:

1. Divergent Medical Testimony

Recommendations

a) Physicians should only determine *physical impairment*. The question of permanent disability should be determined by the court.

b) That the legislative subcommittee, with the Occupational Medicine Committee of the Oklahoma State Medical Association, study the feasibility of a panel system of doctors to implement and assist the State Industrial Court in the settlement of medical disputes.

c) The feasibility of a permanent medical director for the State Industrial Court should be studied.

2. Increasing Medical Costs

Recommendations

a) The Medical Insurance Review mechanism of the Oklahoma State Medical Association should be uti-

lized for solving problems of excessive fees.

b) Cost should be secondary to providing the best in scientific medical care for the injured employee at the earliest possible time following his injury, with an early return to work and prompt settlement of the disability claim as prime objectives.

c) A study of a method of gathering statistics with respect to Workmen's Compensation should be undertaken in order that a proper analysis of medical costs and services can be carried out.

3. Accident Prevention

Recommendation

It is recommended that a study be made of the feasibility of establishing a Safety Division of the State Industrial Commission, with the utilization of safety engineers and implementation of safety standards throughout industry within the state.

MEDICINE AND RELIGION

(Continued from page 342)

plants bring up a whole new series of problems. Our journals are full of articles about the ethical implications of such surgery and medical versus legal definitions of death.

There is a need for new moral and ethical thinking. Medicine needs religion as its team mate. Solutions may not be found; nevertheless, dangerous issues must be faced. Medicine

and religion must complement each other in the solution of moral and ethical problems.

Your Medicine and Religion Committee is working on these issues. Your aid is needed regarding these vital issues today. Have you talked to your minister lately? Medicine and Religion— . . . the spheres of influence are different; our goals today are frequently similar. □



## Dues Increase Faced By AMA

Delegates to the American Medical Association's 117th Annual Convention, held June 16th-20th, in San Francisco, were forewarned in a Board of Trustees report that a substantial AMA dues increase is imminent.

The report said that a substantial increase in the budget of the AMA will be necessary within the next few years if the organization is to fulfill its mission. Further, the threatened taxation of the AMA's approximately \$13 million annual advertising income will seriously reduce the AMA's present budget.

While it was not specifically stated by the Board of Trustees, it is common knowledge that the AMA is considering an annual dues increase from the present \$70 to \$100. Oklahoma is one of the few states which require AMA membership as a condition of county and state society membership. The vast majority of state medical associations provide for voluntary AMA participation.

The AMA House of Delegates considered 143 items of business during the convention, and elected Doctor Gerald D. Dorman of New York City as President-Elect by acclamation. Other elections included Doctor Carl A. Lincke, of Ohio, as Vice-President, and Doctors Walter C. Borne-meier, Illinois, and Russell B. Roth, Pennsylvania, were re-elected by acclamation to their respective posts as Speaker and Vice-Speaker of the House of Delegates. Four Trustees were elected: L. O. Simenstad, M.D., Wisconsin, succeeded himself; and Raymond T. Holden, M.D., Washington, D.C.; John M. Chenault, M.D., Alabama; and John R. Kernodle, North Carolina.

Other principal actions of the House of Delegates are summarized below:

### Racial Discrimination

The House approved a resolution that the bylaws of the AMA be amended to provide for the admonishment and censorship of medical

societies who discriminate because of color, creed, race, religion or ethnic origin, including the ultimate penalty of denying such societies an affiliate relationship with the AMA.

In a separate action, the AMA and the National Medical Association, a primarily Negro group, concluded that "Genuine solutions to the problems of increasing the supply of Negro physicians must emanate through improved curriculum, better teaching, and specialized courses of training at all school levels for promising Negro students." Other activities were recommended to assist disadvantaged Negro youths to qualify for medical school and to succeed in such studies.

### Health Care Financing

Received by the House for information was an important report from the Committee on Health Care Financing which set these directions for the future:

"Adequate health care should be available to all who need it. Recent scientific advances have served to vastly increase the demand for medical services and to increase health care expenditures. Method of financing health care must aid all individuals to achieve the health services they need. Voluntary programs to finance the cost of health services must accommodate to continuing changes and growth."

Proposals under study by the committee include a community fiscal agency for health services, "not as a competitor for existing health insurance plans, but to complement those efforts and stimulate greater achievement"; and "income tax credits for the premiums paid for adequate health insurance . . . and effective and feasible methods of encouraging maximal participation in voluntary comprehensive health insurance programs."

Another adopted resolution urged all state and local medical societies to "act swiftly and firmly in all instances of known exploitation and excessive charges for health care that may occur in their jurisdiction.

A resolution referred to the Board of Trustees called for a program by the AMA of "defining, explaining,

and reporting the many categories of health care expenditures; analyzing health care cost and expenditure data developed and reported by other sources; and providing . . . information on health care costs which can be used to place the true cost of medical care in proper perspective with the public."

### Legislation and Government

Regarding comprehensive health planning, the House adopted a report recommending that "The House of Delegates urge those states which have not held informational conferences on the subject to conduct orientation conferences in order to reach a greater number of leaders at the local level. (The Oklahoma State Medical Association is currently planning such a conference for the Fall.)

Also adopted was a report that "the AMA and the constituent and component societies give unstinted, diligent attention to the process of comprehensive health planning which, at present, places priority on local initiative and decision-making and that the AMA at all levels endeavor to assure through all appropriate means, a system of checks and balances so that state and area planning agencies are not given authority to subordinate local planning efforts and dictate local decisions on health planning."

In addition, the House reaffirmed "previous policies requesting that all efforts be made to eliminate recertification requirements under Medicare," and called on the Congress "to amend the laws and regulations pertaining to P.L. 89-97 to specifically permit direct billing of all Title XIX recipients."

The House also resolved that "the Board . . . take appropriate action seeking the establishment of a separate Department of Health headed by a Doctor of Medicine."

A resolution proposed that Congress establish within its control a "Committee on Rules and Policies of Federal Administrative Agencies" whose "responsibility it will be to review rules and policies promulgated by Federal administrative agencies to determine that (they)



are in accord with the legislative intent of the Congress." This resolution was adopted in principle and referred to the Board of Trustees and to the Council on Legislative Activities.

### Manpower

A new Council on Health Manpower was created by the House of Delegates.

With respect to relationships and negotiations between the AMA and the osteopaths, the House accepted for information the Board of Trustees report which stated, "In the absence of cooperative leadership on the part of the practicing osteopaths and osteopathic educators, accomplishments by the AMA are rendered difficult. Such leadership was forthcoming in California, and is now needed elsewhere. When this osteopathic leadership is developed, the AMA stands ready to cooperate to the utmost,"

The new Council on Health Manpower was directed to take the steps necessary to complete plans for the organization and financial support of a commission, to be established outside of government, to coordinate fully all of the issues and activities involving the status of foreign medical graduates in the United States.

### Education, Medical and Allied

The House urged "that the constituent and component societies make every effort to insure that additional financial support for medical schools be obtained from all available sources. Further, it was urged that all physicians individually recognize their debt as graduates of medical schools . . . by contributing regularly and generously . . . to the AMA-Educational Research Foundation and other appropriate channels."

The Board was also referred a resolution providing that osteopathic physicians be admitted to AMA approved hospital internship and residency programs under certain circumstances.

The House approved a statement on infant mortality which included a number of recommendations, among which were these:

"Recognizing the fact that unfavor-

able environmental and socio-economic factors as well as medical factors are involved in infant mortality, the medical profession should support all constructive community efforts for the improvement of living conditions among the needy.

"The AMA should inaugurate and support programs of health education, including good maternal and child health practices, family life and sex education and the appropriate use of health care resources.

"The AMA should give impetus to broad and inclusive programs for the care of unwed mothers."

### Transplantation

A Judicial Council report was adopted on "Ethical Guidelines for Organ Transplantation."

One of several guidelines was, "when a vital, single organ is to be transplanted, the death of the donor shall have been determined by at least one physician other than the recipient's physician. Death shall be determined by the clinical judgment of the physician. In making this determination, the ethical physician will use all available, currently accepted scientific tests."

### Public Relations

A Board report was adopted that reproduced a statement by the AMA's Public Relations Counsel, Mr. Philip Lesly. Titled "Considerations for Coping with the New Climate Involving Health Care," the statement pointed out many problems faced by the medical profession and urged that the "foundations of public relations for the profession" must be:

Practical — viewing each circumstance in terms of the consequences of any action or position.

Positive—AMA should be the leader of action and thought on medicine; not in the position of reacting to the actions or statements of others.

Anticipatory—AMA should be the master of change rather than its victim.

On the Initiative—fostering balanced, informed, widespread coverage of medicine and health care rather than reacting to matters initiated by others. This effort should

be augmented by voices of respected laymen.

Selective — Concentrating on activating AMA's programs and priorities, with full knowledge it will mean passing up many things that appear to need attention but are not part of the over-all constructive plan. □

## Computer Programs For Hospitals Aired At September Workshops

A computerized medical information system, designed to aid medical and hospital staffs in planning and evaluating patient care, will be the subject of regional workshops to be held September 6th and 7th in Oklahoma City and Tulsa.

Physicians, hospital administrators and medical record librarians have been invited to attend the day-long program, which will be conducted on Friday for the Western Oklahoma group, then repeated on Saturday in Tulsa.

The purpose of the workshop will be to familiarize key medical and hospital personnel with the advantage of installing the Professional Activity Study (PAS) and the Medical Audit Program (MAP) in their hospitals. At present, only sixteen Oklahoma institutions have utilized the systems, while there are 1,200 programs in operation in the U.S. and Canada.

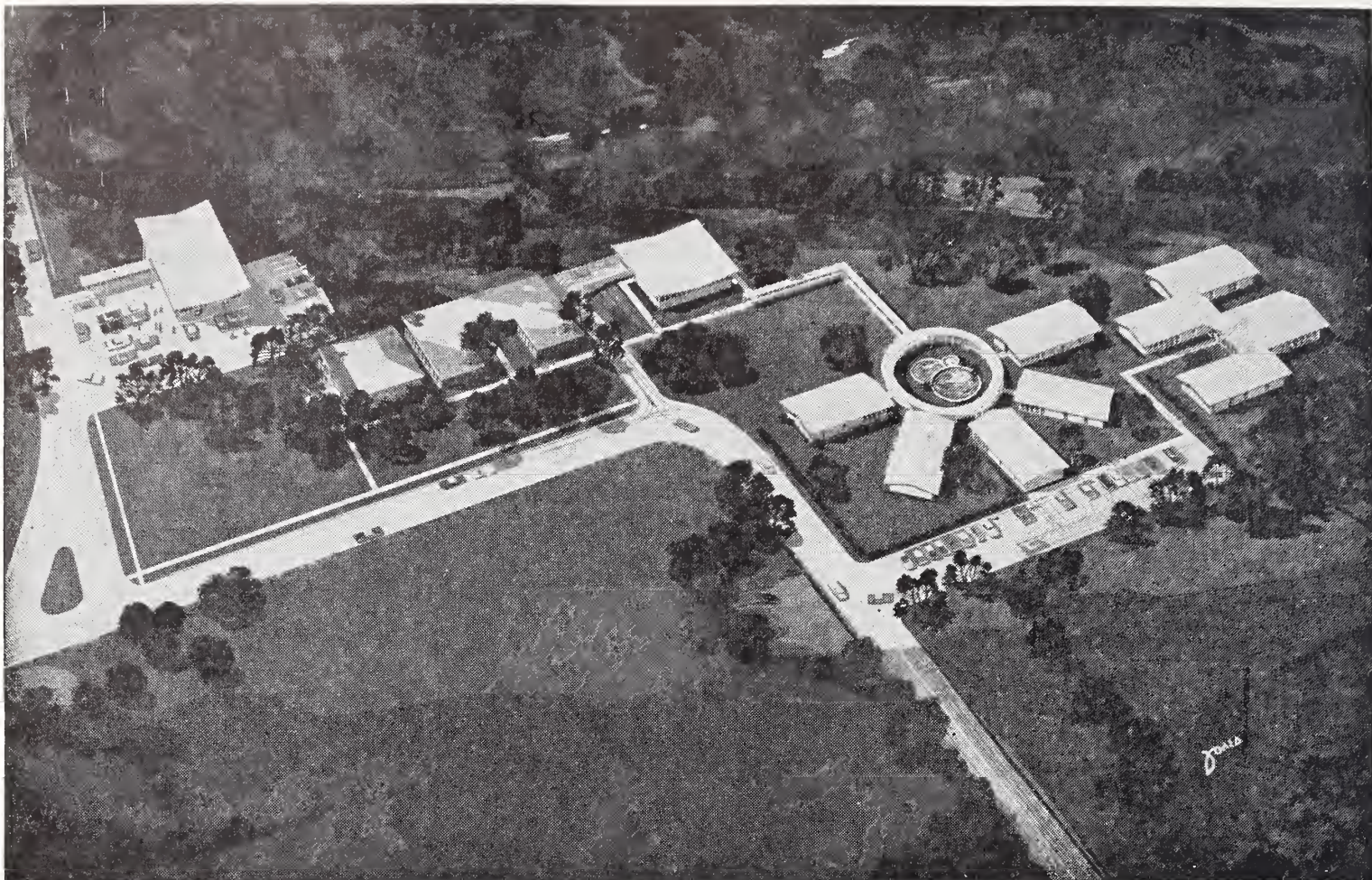
Faculty for the workshops will feature personnel from the Commission on Professional and Hospital Activities, Ann Arbor, Michigan, the Central office for PAS and MAP. Also, guest tutors from participating Oklahoma hospitals will instruct.

Teaching emphasis will be on actual practice in utilizing data from the computer studies, based on practice evaluation of sample reports.

The workshops are sponsored by the OSMA, the Oklahoma Hospital Association, the Tulsa and Oklahoma County Medical Societies, the Oklahoma Regional Medical Program, the Oklahoma Association of Medical Record Librarians, and CHPA.

Further information may be obtained from the Director of Medical Records, St. Francis Hospital, 6161 South Yale Avenue, Tulsa 74135. □





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## Councils and Committees Named For 1968-69

Doctor Scott Hendren, President of the Oklahoma State Medical Association, has announced the appointment of 171 physicians to serve on 30 councils and committees during the current organizational year.

Standing committees and councils are established in the OSMA bylaws, while special committees are desig-

nated by the president to carry out specific functions under the jurisdiction of appropriate councils.

Remaining appointments will be completed within two weeks, Doctor Hendren said. In addition, the Woman's Auxiliary to the OSMA will have representatives on most councils and committees.

Several association committees are already active, and others are being contacted by Hendren with a program of assignments and priorities, some based on House of Delegates directives and some according to Doctor Hendren's own program of objectives.

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## Brandt Named Associate Dean of Medical School

Edward N. Brandt Jr., M.D., Ph.D., has been appointed associate dean of the University of Oklahoma School of Medicine and associate director of the Medical Center, effective July 1st.

Now assistant to the vice-president for Medical Center affairs (James L. Dennis, M.D.), Doctor Brandt will succeed Joseph M. White, M.D., who resigned to accept an appointment as vice-president for academic affairs and dean of medicine at the University of Texas Medical Branch.



Doctor Brandt will retain his position as director of computer operations and the medical school academic rank of professor of preventive medicine and public health and associate professor of research medicine. He is also professor of biostatistics and epidemiology in the new OU School of Health.

A 1960 graduate of the University of Oklahoma School of Medicine, Doctor Brandt received his Ph.D. in biostatistics from OU in 1963. He joined the faculty in 1961 as an instructor and was instrumental in developing the Medical Research Computer Center and the Biostatistical Unit in the Department of Preventive Medicine and Public Health.

Doctor Brandt this spring was director of the first national conference on the use of computers in medical education co-sponsored by the U.S. Public Health Service at the University of Oklahoma Medical Center. □

## WA-AMA Names Mrs. Forester Director



Mrs. Virgil Ray Forester, wife of Doctor Forester, Oklahoma City gastroenterologist and Assistant Clinical Professor of Medicine at the University of Oklahoma, was named to a two-year term as a Director of the Woman's Auxiliary to the American Medical Association at their recent meeting in San Francisco. She was installed Wednesday, June 19th, at ceremonies held in connection with the convention. In addition, Mrs. Forester was elected to the 1969 Nominating Committee of WA-AMA.

Beginning her seventh year of office with the national organization, she has served in many capacities in county and state work also. A Past-President of the state woman's auxiliary, she acted as Past National Liaison for the Woman's Auxiliary to the Student American Medical Association and is presently state and county sponsor of the Interns and Residents Association in Oklahoma.

In November of this year, Mrs. Forester will take office as President of the Woman's Auxiliary to the Southern Medical Association. □

## DEATH

RALPH E. PAYNE, M.D.

1908-1968

Edmond physician, Ralph E. Payne, M.D., father of Ralph E. Payne, Jr., M.D., Oklahoma City physician, died in Edmond, July 1st, 1968. A native of Moore, Oklahoma, he graduated from the University of Oklahoma School of Medicine in 1948. He had practiced in Edmond for over 19 years.

Doctor Payne had also served as principal of the Edmond high school for many years. □



## Resolution Defends Private Practice Of Medicine

A resolution introduced by the Pottawatomie County Medical Society and approved by the OSMA House of Delegates at its 1968 annual meeting points up one of the most perplexing problems facing the American people today: *Legislation by Regulation*.

The Congress of the United States passes thousands of laws each year, and these are then processed to various bureaus and agencies of government for the drafting of implementing regulations. Unfortunately, the intent of the Congress is frequently distorted beyond recognition by the regulation drafters.

A classic example of "Legislation by Regulation" may be found in the rules implementing Public Law 89-97, the so-called Medicare Act.

The following resolution, reprinted for the information of all OSMA members, illustrates the interference with medical practice fostered by Medicare regulations.

(Regarding the distortion of law by regulations, the AMA House of Delegates approved a resolution on June 19th calling for Congress to establish within its control a "Committee on Rules and Policies of Federal Administrative Agencies" whose responsibility it will be to determine that policies established by administrative agencies are in accord with the intent of the law.)

### Resolution 5: Private Practice

INTRODUCED BY: Pottawatomie County Medical Society  
SUBJECT: Private Practice  
(Oath of Hippocrates)  
REFERRED TO: Reference Committee No. III

WHEREAS, government medical programs are requesting such information as:

A. "Please advise the name, quantity, strength, and manufacturer's name of each injection."

B. "Were there any unusual circumstances requiring parenteral rather than oral administration of the medication?"

C. "Was any oral medication prescribed for ingestion on the date parenteral medication was given? If so, what and on what dates?"

D. "Has he been a patient of yours prior to this treatment? If so, what was he treated for and on what dates?"

E. "What was his complaint which prompted his call?"

F. "What was the patient's condition which required the injection?"

G. "In order to determine the benefits payable for the hospital care we need the following information:

1. Initial examination and history, including subjective and objective findings.

2. Initial objective and subjective diagnostic findings.

3. Treatment and progressive notes.

4. Other periodic and informative diagnostic notes."

H. "Was it medically necessary to extend your service?"

I. "All billing should clearly reflect a medical need for each visit, and it is the physician's responsibility to make it clear to the patient that he is responsible for any unnecessary calls."

J. "Standard medical practice dictates medical necessity. It is not standard medical practice to give parenteral administration vs. oral medication for the entire course of treatment."

K. "The doctor has over-utilized the program"; and

WHEREAS, the government programs do not have a definition of "medical necessity" or "medical need" by their own admission; and

WHEREAS, Public Law 89-97, Section 1801 states:

"Nothing in this title shall be construed to authorize any Federal officer or employee to exercise any supervision or control over the practice of medicine or the manner in which medical services are provided, or over the selection, tenure, or compensation of any officer or employee of the institution, agency or person providing health services; or to exercise any

supervision or control over the administration or operation of any such institution, agency or person,"

and it is evident that the intent of the law is being disregarded; and

WHEREAS, the government programs, by their own admission, are having non-medical people make medical judgments and decisions:

Aetna Medicare letter dated April 19th, 1968:

"The first decision as to the possible lack of medical necessity is determined by our processor who processes, personally, some 300 claims per week from a random selection of claims submitted. Her determination is not so much one of medical necessity, but experience in processing makes unusual, frequent, services stand out to her as though the claim is submitted on striped red paper."; and

WHEREAS, historically, physicians have considered injections, as well as examinations, and other modality of treatment given in their office a professional service and not a commodity; and

WHEREAS, any attempt to force physicians to separate cost of examination and treatment will force the physician to reconsider his routine charge for an office call; now therefore be it

RESOLVED, that the Oklahoma State Medical Association insist upon the Federal and State government and its fiscal intermediaries to carry out the intent of P. L. 89-97, Sec. 1801; and further be it

RESOLVED, that the Oklahoma State Medical Association recognize medical injections in doctor's offices as professional service, and that the term "injection" be the only requirement for an itemized statement, unless the doctor voluntarily gives the information; and further be it

RESOLVED, that the Oklahoma State Medical Association recognize that medical injections are only another modality of treatment in the art of the practice of medicine, and only the attending physician is qualified to evaluate the value of the injection; and further be it



RESOLVED, that the Oklahoma State Medical Association consider laboratory tests as a medical service and not a commodity, and that the charges for medical laboratory should be the usual and customary charge of the attending physician, and further be it

RESOLVED, that the Oklahoma State Medical Association reaffirm its policy of opposing any type of fee schedule for physicians, and further reaffirm its policy that whenever the third party does not pay the usual and customary fee the doctor shall have the right to collect that part not paid by the third party from the patient; and further be it

RESOLVED, that the Oklahoma State Medical Association oppose any attempt at standardization of the practice of medicine by any means the third party attempts to bring this about; and further be it

## Tulsa Medical Society Awards Scholarships

The Tulsa County Medical Society recently awarded \$3,250 in scholarships to 13 students of medicine, dentistry, nursing and x-ray technology for the 1968-69 school year.

Recipients of the cash grants were:

George Bryant Boyd, 5458 West 8th, a junior at the University of Oklahoma School of Medicine, \$200.

Janice Elaine Clark, 1336 South Gary, a sophomore at the University of Oklahoma School of Medicine, \$600.

Charles Allen Ogle, Route 1, Broken Arrow, a junior at the University of Oklahoma School of Medicine, \$200.

Larry Michael Prater, 1925 North Denver, a junior at the University of Oklahoma School of Medicine, \$200.

The Doctor Anna Luvern Hays memorial scholarships, named in memory of the late Tulsa pediatrician who died in 1965, went to:

Paul Gary Hull, 4747 South Darlington, a freshman at the University of Oklahoma School of Medicine, \$300.

Larry Carl Minnick, 2335 South 63rd West Avenue, a freshman at the University of Oklahoma School of Medicine, \$300.

RESOLVED, that the Oklahoma State Medical Association recognize that some patients have in the past, and shall always, over-utilize medical services, and that the doctor cannot determine if medical service is needed until an examination is done; and further be it

RESOLVED, that the House of Delegates of the Oklahoma State Medical Association establish the Board of Trustees of the Oklahoma State Medical Association as a committee of one, and call it "Private Practice Committee," and it shall be its function to investigate all infringement of third parties upon the private practice of medicine; and further be it

RESOLVED, that a complete copy of this Resolution be sent to every doctor in the state calling to their attention the formation of such a committee.

Dale Gene Parks, 7820 East 4th, a freshman at the University of Oklahoma School of Medicine, \$300.

James Lewis Pool, 2505 East 6th, a freshman at the University of Oklahoma School of Medicine, \$300.

Five scholarships were awarded from funds contributed by the Woman's Auxiliary to the Tulsa County Medical Society, and went to:

Harry James Maxey, 1135 South Owasso, a freshman at the University of Missouri School of Dentistry, \$250.

Linda Ann Paine, 7144 East 6th, a freshman at the University of Oklahoma Medical Center School of X-Ray Technology, \$150.

Leonard Gale Charns, Jr., 1601 East 14th, first-year student at Hillcrest Medical Center School of Nursing, \$150.

Joyce Ann Hyslop, 214 West Orleans, Sapulpa, second-year student at St. John's Hospital School of Nursing, \$150.

Sharon Kay Murphy, 1531 North Columbia, first-year student at Hillcrest Medical Center School of Nursing, \$150.

The awards are made annually to students in health careers. □

## BOOK REVIEWS

**THE DOCTOR SHORTAGE: AN ECONOMIC DIAGNOSIS.** Rashi Fein. 576 pp. Washington: The Brookings Institution, 1967. \$6.00.

Fein, an economist of the Brookings Institute interested in health care, makes an interesting and sound projection for the next decade of the demand for medical services and the supply which will be available. In 1956, there were 305,000 physicians in the United States. The demand, under the influence of increasing population, income, education and third party payments, will be for approximately 375,000 physicians in 1975. A 22 to 26% increase in demand for physicians visits is projected to 1975 with one of 35 to 40% by 1980. The supply of physicians allowing for immigration and the increased use of auxiliary personnel (such as nurses) will be about 362,000, moderately less than the expected number demanded but more relative to population than we have today. Extension of these numbers to 1980 to 1985 leads to much larger predicted shortages.

One answer to the problem of the physician shortage is to increase the number. Another is to increase the "productivity" of the existing (and projected) numbers. Here Fein indulges in a somewhat superficial discussion of the advantages of group practice, the development and use of new health personnel such as "physician assistants" and the better use of existing personnel such as nurses.

The author neglects or perhaps avoids the influence of income on the total supply of physicians and the balance of specialists interest among existing practitioners. He also briefly touches on the reluctance of the medical profession to increase the number of health personnel, chiefly by expanding educational requirements for specialty licensure.

He correctly points out that, whereas the economist can indicate the need for innovation and raise a set of questions for analysis, the medical profession must develop the data, organize, conduct and evaluate



experimental programs in the delivery of health care.

In this age of a service-oriented and health conscious society, many will find this book of interest and it represents an important addition to the literature. It is somewhat marred in that the author's style is uneven and there are instances of the use of double negatives and sentences beginning with prepositions. *Harris D. Riley, Jr., M.D.*

**IMPACT OF BASIC SCIENCES ON MEDICINE.** Edited by B. Shapiro and M. Prywes. New York: Academic Press, 1966. 328 pp. \$14.95.

This is a report of a symposium held in Jerusalem in June, 1965, to commemorate the 40th anniversary of the Hebrew University and the dedication of the Hebrew University-Hadassah Medical School.

The title of this book is considerably misleading. In actuality the effect, the role and the problems of basic science in medicine are not discussed or approached. The book rather is a compilation of learned discussions of isolated areas of basic research presented at a sophisticated and high-powered level. These include studies of enzyme activities, regulation of cell function, membrane transport, membrane biochemistry and others. The opening essay by Bean entitled, "The Implications of the Contemporary Scientific Revolution on the Education of Teachers of Medicine" is the only portion which deals with the problems suggested by the title.

The book is useful only for a detailed description of the status, at that time, of work in selected areas of basic research.—*Harris D. Riley, Jr., M.D.*

**PEDIATRIC X-RAY DIAGNOSIS: A Textbook for Students and Practitioners of Pediatrics, Surgery and Radiology.** Fifth Edition. John Caffey with collaboration of Frederic N. Silverman. 1192 pp. Chicago: Year Book Medical Publishers, Inc. \$39.50.

This is the fifth edition of the "bible" of pediatric radiology. Changes and advances in pediatrics and in radiology since the fourth edition of Caffey's magnificent and invaluable book have led to the most extensive revisions undertaken since the first edition as well as to the need for a collaborator. Dr. Frederic Silverman, one of Caffey's students and now Director of Radiology at the Children's Hospital in Cincinnati, is an excellent choice. He has written the new sections on the urinary tract and the reproductive system. There are also new sections on chromosome abnormalities and miscellaneous dwarfs. The sections on hyaline membrane disease of the newborn, congenital dislocation of the hips, congenital lesions of the heart, primary neoplasms of the growing skeleton and the transverse line of Park have been rewritten and new material has been added. Despite these changes, the fifth edition by means of considerable rewriting and certain deletions is some 65 pages shorter than the fourth edition. The section entitled, "Thymus and Sudden Death" and the discussion of the pathology of rickets have been removed. Many of the older figures and references have also been deleted and new ones have been added. The general excellence of the book has been maintained at a high level. The index has been almost doubled which adds considerably to the book's usefulness.

Although expensive, this book with its handsome binding, beautiful paper and over 1700 illustrations is of inestimable value both to the pediatrician and the radiologist.—*Harris D. Riley, Jr., M.D.*

**LABORATORY TESTS IN COMMON USE.** Solomon Garb, M.D. Fourth edition. Paper-back, 192 pp. New York: Springer Publishing Company, Inc., 1966. \$2.85.

This book, *Laboratory Tests in Common Use*, is an inexpensive desk-reference type of book which would be useful at nursing stations and in physician reference areas. It is not the type of highly technical book which would help in setting up or

performing laboratory tests, but would be helpful as a reference book in laboratory areas.

It is more thorough in the discussions concerning "Handling of Laboratory Specimens" and "Interfering Materials and Drugs" than most laboratory books. Some interesting tests, such as the "Diatrizoate Absorption Test" are mentioned, which are not covered in other books. Also, some areas are really rather basic, such as the discussion on RH. The "Normal Values" quoted may be disputed by other authorities because of failure in some instances to make allowances for age differences.

This book also includes some tests which, in some laboratories, have been discontinued. Examples: Icterus Index, N.P.N., Zinc Sulfate Turbidity, B.M.R. and Colloidal Gold.

The material (serum, whole blood, urine or etc.) required for the determination will be helpful to nursing units. However, the pH determination is listed as requiring serum, and whole blood by capillary is being generally adopted in most laboratories.—*Mr. Auldon F. Hutton, Assistant Professor, Department of Laboratory Medicine, University of Oklahoma Medical Center, Oklahoma City, Oklahoma*

**TOUCH, HEAT AND PAIN.** Ciba Foundation Symposium. Edited by A. V. S. De Reuck, M.Sc., D.I.C., A.R.C.S., and Julie Knight, B.A. 389 pp., Boston: Little, Brown, and Company, 1966. \$14.00.

The title of this book is disappointing, since the physiological basis of these sensations is still poorly understood. Nevertheless, this is a readable account of recent studies that are relevant to touch, heat and pain.

The 14 concise presentations by world renowned neurophysiologists are divided into five sections, namely, discrimination of stimulus differences in man, structure of receptors, biophysics of receptors, single receptor activity, and the activity of populations of receptors. The relevance of the papers is enhanced by discussions after each paper, plus general discussions after each sec-



tion. The papers are concerned mainly with pressure reception, since this area is better understood than temperature reception or pain.

The most interesting parts for a clinician are the first section on stimuli in man and a splendid final discussion concerned mainly with pain. It is suggested that pain may arise both from specific stimulation of some receptors that are still poorly defined and from non-specific stimulation of a whole nerve trunk. In addition, weak stimulation of "pain" receptors may not produce unpleasant sensations. The symposium participants suggest that their future research can now be more concerned with sensation itself rather than only with the physiology of receptors and conducting pathways.—*R. E. Thies, Ph.D.*

#### A SYMPOSIUM ON THE CHILD.

Edited by John A. Askin, Robert E. Cooke and J. Alex Haller, Jr. Baltimore: The Johns Hopkins Press. 376 pp. \$10.00.

This volume is a collection of 34 essays representing the majority of those addresses given on the occasion of the dedication of the new Children's Medical and Surgical Center at Johns Hopkins Hospital on May 14-15, 1964. Most of the authors represented in this book were at one time or another, associated with the Harriet Lane Home (the Children's Hospital) of the Johns Hopkins Medical Center. They make more than creditable tribute to it.

This book is the type that can be picked up and read essay by essay as time permits. It makes no attempt to cover all of pediatrics but does contain many outstanding sections. The book opens with an essay by Robert Cooke entitled, "The Biological Advantages of Man," which is a review of the contributions of the child to man. There is an excellent essay on the mechanism of antigen-antibody reactions and the physiologic functions of gamma globulin by Victor Najjar; a most informative one on control of growth and development by Alfred Bongiovanni and an elegant discussion by Hattie Alexander entitled, "Insight

Into Human Genetic Defects through Microbiological Tools." Maelyn McCarty of the Rockefeller University offers a stimulating and thought-provoking essay entitled, "Molecular Biology and Medicine." The nature of the other essays ranges from such limited topics as esophageal disorders in children to broad subjects such as that by Wegman entitled, "Child Health in a Changing World." William P. Longmire, Jr., originally from Sapulpa, Oklahoma, provides an excellent survey up to 1964 of clinical experiences in tissue and organ transplantation. Anyone who has been associated with the Harriet Lane Home and Johns Hopkins will find the "History of the Harriet Lane Home" by Edwards A. Park, Professor Emeritus of Pediatrics, a fascinating account.

This *Festschriften* is a valuable collection of essays by persons who have made many contributions in the field of biology and medicine and makes for interesting reading.—*Harris D. Riley, Jr., M.D.*

**PULMONARY DISEASES AND ANOMALIES OF INFANCY AND CHILDHOOD.** M. I. Levine and A. V. Mascia. New York: Harper and Row, Publishers, Inc. 368 pp. \$12.50.

As stated in the preface, this book has been written primarily for pediatricians, roentgenologists and medical students and for all who have need of a convenient source of information on the wide range of pulmonary diseases and anomalies occurring during infancy and childhood. In this volume, the authors have attempted to present, review and categorize the numerous pulmonary conditions seen in infancy and childhood. It is a comprehensive book, beautifully produced on fine paper with 140 illustrations, chiefly of roentgenograms. The authors cover most respiratory conditions likely to occur in childhood and many which are quite rare. A short description is given of each disorder with the roentgenographic findings, differential diagnosis and treatment. Each chapter is followed by a useful bibliography. There is a final chapter on

diagnostic procedures for pediatric pulmonary disease. There are only two real weaknesses of this book. One concerns the relatively large amount of space given to the very rare conditions in contrast to that on the more common disorders. The other is that the discussion of treatment of certain of the disorders is so superficial that it is of little value. The authors are attending pediatricians at the New York Hospital-Cornell Medical Center.

This is one of the two currently available books specifically dealing with respiratory and pulmonary disorders in infants and children. It is a comprehensive categorization of the problem and serves as a valuable reference for the physician who deals with disorders of infants and children.—*Harris D. Riley, Jr., M.D.*

#### ADVANCES IN PEDIATRICS, XIV.

Edited by S. Z. Levine. Chicago: Yearbook Publishers, Inc., 1966. 307 pp. \$11.50.

Of the books which attempt to bridge the gap between medical journals and textbooks, one of the most successful over the years has been *Advances in Pediatrics* edited by Doctor Sam Levine. The continued excellence of this series of publications has been due chiefly to Levine's choice of subjects and authors which have made each volume a mixture of definitive articles on some subjects combined with occasional controversial and thought-provoking ones on other subjects. A fine balance has been achieved. Although an attempt has obviously been made to treat subjects of contemporary interest, the excellence of many of the articles has made them standard reference sources for the subject concerned.

Volume XIV maintains the high standards set in the earlier volumes. One of the outstanding contributions in this volume is that by Karzon and Henderson on live-virus vaccines. It provides comprehensive coverage of this rapidly expanding field. There is a spectrum of subject ranging problems encountered in daily practice to the esoteric. On the practical side is an up-to-date



survey of poisonings in children by Jacobziner and an excellent theoretical discussion of biochemical development by Kretchmer and Greenberg. Between these two extremes are three articles dealing with definitive subjects such as ulcerative colitis in childhood and adolescence, hemoglobinopathies and hereditary renal disease.

This current volume of *Advances in Pediatrics* represents a significant contribution to the pediatric literature and should be a useful addition to the pediatrician's library.—Harris D. Riley, Jr., M.D.

Ciba Foundation Symposium: **ETHICS IN MEDICAL PROGRESS WITH SPECIAL REFERENCE TO TRANSPLANTATION.** Edited by G. E. W. Wolstenholme and M. O'Connor. Boston, Massachusetts: Little, Brown and Company, 257 pp. \$11.75.

This Ciba Symposium is divided into 13 chapters, seven of which are devoted primarily to the various problems of organ transplantation. Although emphasizing organ transplantation, the book covers many inter-related subjects such as euthanasia and the definition of death. The reader is given a broad prospective on many current and future ethical problems in medicine which seem destined to challenge the basic tenets of our society. The proceedings of the symposium consist of a series of short and usually provocative papers followed by rather extensive discussion. The discussants include physicians, lawyers and theologians. Because of the international composition of the participants, interesting differences in approaches to various problems emerge. For example, in 1947 a new law was passed in France authorizing autopsies in certain hospitals immediately after death and without consent of any kind whenever scientific or therapeutic interest warranted it.

The presentations and discussions cover well such subjects as the eth-

ics of obtaining consent from various categories of living donors of organs, including paid donors and prisoners. There is also treatment of the rights of children as donors for organ transplants. There is considerable treatment of the problems of the artificial prolongation of life with respirators and pump oxygenators to insure vital organs and the problems of redefinition of death in this whole situation. In the chapter on the development of blood transfusion, the not infrequent problem when parents refuse against medical advice to permit their child to receive transfusion therapy is reviewed. Both the ethics and the economics of maintenance of hemodialysis for chronic renal failure is well discussed.

The book is also valuable because it assembles in one place as appendices some of the more important guidelines relating to human investigation such as the Nuremberg Code, the Declaration of Helsinki, the Declaration of Geneva, and others.

The reader is forced to realize as never before that the ethics of the practice of medicine are becoming more complex and as a result are no longer the sole province of the medical profession but involve decisions that must be shared by other professional groups and by society as a whole. In view of current activities throughout the world in medicine, this book is particularly timely.—Harris D. Riley, Jr., M.D.

#### OSLER'S TEXTBOOK REVISITED:

Reprint of Selected Sections with Commentaries. Edited by A. McGehee Harvey and Victor A. McKusick. New York: Appleton, Century, Crofts, 1967. 361 pp. \$13.50.

From September, 1890 to January, 1892 Osler, then at Johns Hopkins, devoted most of his time to writing the *Principles and Practice of Medicine*. For some time he had recognized a clear need for a fresh endeavor in the textbook field. Most of the textbooks in use at that time were by foreign authors. The first edition of Osler's Practice appeared

in 1892. The seventh edition which was the last Osler prepared alone and the one from which excerpts are reprinted in this volume appeared in 1909. It has been said that in his textbook Osler "succeeded in making a scientific treatise literature."

In *Osler's Textbook Revisited* editors Harvey and McKusick have chosen 17 sections from Osler's textbook for reproduction. The editors introduce their selections with concise surveys of the influence of Osler's textbook and of the medical years immediately before and during its appearance in seven editions from 1890 to 1909. Then follow the 17 excerpts each followed by a commentary on the excerpt and on the change in growth of knowledge, if any, of that disease or syndrome since 1909. For example, the reprinted nine-page section on rheumatic fever is followed by a two and one-half page essay by Maclyn McCarty of the Rockefeller University which points out where Osler's descriptions are still valid, where ignorance or misconception has been dispelled by later investigation and where we stand today in concept and practice. Other sections are discussed by current leaders in the field—that on tabes and paresis by David B. Clark, Head of Pediatric Neurology at Hopkins, and that on beri-beri by W. B. Bean, an Oslerian bibliographer now at the University of Iowa.

This publication of selections from the seventh edition of the *Principles and Practice of Medicine* give us an occasion and, in some degree, a means for measuring medicine's progress in six decades and for considering the meaning of Osler's life and work for the practitioner in 1968. Despite its impact on all aspects of medicine, it is clear that Osler's *Principles* was "disease-oriented" and paid little attention to the all-important-concept of "what is man." This collection, however, sketches for us the evolution of important ideas in clinical medicine over 60 years and reminds us how far we have to go before we see 1900 as we now see 1700.—Harris D. Riley, Jr., M.D. □



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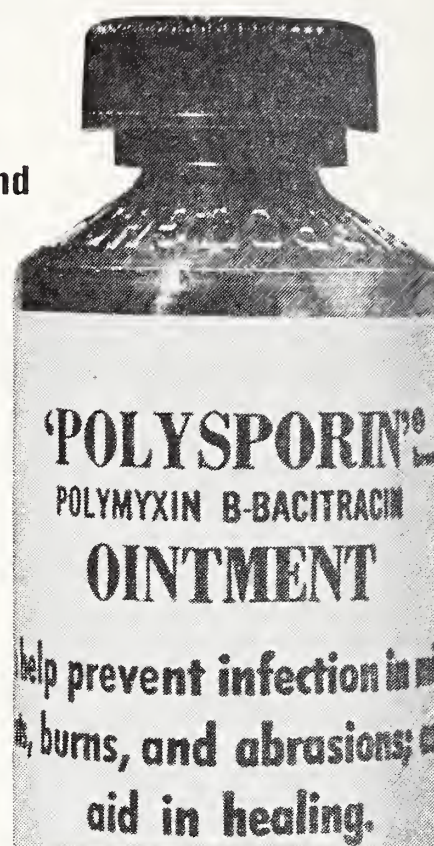
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## *Motor Vehicle Accidents*

**M**EDICINE, although awakening to the auto accident scourge, has not yet applied its talents and resources with the same vigor which it did to other diseases to bring them under control. It has, along with the rest of the country, looked upon death by auto as a matter of chance. However, it is increasingly apparent that accidental injuries can be analyzed by the standard methods used to study the incidence and cause of disease, for accidents exhibit some of the same biologic and physical inter-relations as pathologic processes.

During the last five years, the number of drivers increased from 90.5 to 102 million and the United States Department of Transportation forecasts 126 million by 1975. The largest proportion of increases in the number driving occurred at ages under 20. During 1968, more than 100,000 persons will be killed in automobile accidents in the industrialized areas of the world and at least half of the fatalities will occur in the United States. Death rates, on a population basis, have shown no improvement in this country in the past 25 years and they have been increasing since 1960. They have also been rising in many other countries. The number of injuries is approaching 2,000,000 each year, and about 160,000 are permanent impairments of some degree. Considering both injuries and fatalities, one can estimate that ten per cent of the population in the United States will be killed or injured during the next 15 years.<sup>1</sup> Property damage annually is estimated at 9.8 million dollars.<sup>6</sup>

Numerically speaking, automotive accidents appear to be primarily an affliction of youth, and young males predominate. This fact is based on the inexperience and also on the temperaments and attitudes characteristic of youth and early maturity. Of the 53,000 people killed in 1967, approximately half were between 15 and 30 years of age. One motor vehicle death in five will involve a male 15 to 24 years of age. If the years of expected life are multiplied by the number of persons at each age killed in automobile accidents, more than 1,750,000 years will be lost prematurely. In this regard, motor

vehicle accidents are far worse than cancer or heart disease.<sup>1</sup>

An alarming aspect of motor vehicle safety is that it is increasingly a problem involving infants, children, and adolescents. It is quite apparent that increased attention must be given to the pediatric aspects of motor vehicle safety. Since 1906, in the United States, the under one-year and the 15 to 25-age groups have shown an increasing number of deaths due to motor vehicle accidents. The death rate for most other groups has been declining since the late 1920's and 1930's.<sup>2</sup> Infants and children are often innocent victims in automobile accidents in which the vehicle is driven by an adult. In comparison to adults, a proportionately larger number of infants and children are fatally injured in pedestrian accidents. In 1963-64, motor vehicle accident deaths made up 43 per cent of all accidental deaths in boys five to 14 years and 50 per cent in girls in this same age group.<sup>3, 4</sup> A comparison of the actual death rate for the two sexes shows that the rate among boys is exactly twice that among girls. Pedestrian accidents account for three out of every five of the deaths in motor vehicle accidents among children five to nine years of age and for a little over one out of every four of the fatalities at age ten to 14. In the later teens, 15 to 19, motor vehicles continue to account for the largest proportion of the death rate from accidents among both boys and girls.

Markush and coworkers<sup>2</sup> suggest several hypotheses for the trend variation in age-motor vehicle mortality relationships. The rising rates in children may be due to inexperience, that is, a relative lack of previous contact with motor vehicles, regardless of whether a pedestrian, driver or passenger, and increased exposure. The under-one and 15 to 24-year age groups are both new to their particular exposure and, therefore, have not benefitted from prior experience.<sup>2</sup> The deaths in the under-one-year age group between 1949 and 1960 were due almost entirely to nonpedestrian traffic accidents,



whereas the mortality in the five to 14-year group was divided almost equally between pedestrian and nonpedestrian. Infants are passive victims of the automobile. Certainly the increased exposure of infants is related to some extent to the increased use of automobiles by housewives for domestic activities. Most of the deaths in the 15 to 24-year age groups in recent years are in the traffic, nonpedestrian category and almost certainly are the results of increased exposure. Young drivers may be driving more poorly than before because of psychological factors, such as less concern for self and others and increasing insecurity.<sup>2</sup> In addition to a lack of driving experience, young drivers tend to take more risks.

The risk of accidental death is three to ten times higher in the passenger automobile than on buses, trains or airplanes. Saturdays and holidays are the most hazardous days and accident rates are higher at night. "Driving too fast" is a contributing factor in more than one-third of all fatal accidents. Rural area residents are more likely to be killed in traffic accidents than urban area residents and pedestrians, most of whom die in urban centers, and account for 20 per cent of all traffic fatalities.<sup>6</sup>

To plan a preventive program for motor vehicle accidents, the epidemiology and causes must be investigated. An epidemiologic approach involves a study of the many influences and the inter-relationships between the host (driver and automobile occupants), agent (automobile and equipment), and environment (physical and social).<sup>1,9</sup> The statistical evidence for proneness to injury is quite limited but it has been well-documented that trained drivers, especially those with formal instruction as beginners, tend to have fewer accidents. Recent estimates of the role of alcohol as a causal factor have been revised upwards to about 50 per cent of the fatal accidents.<sup>1</sup> Medical conditions apart from alcoholism—epilepsy, diabetes and others—are contributing causes in at least five to ten per cent of motor vehicle accidents.<sup>6</sup> It is obviously important for the physician to be increasingly alert to identify the poor risk driver and take appropriate corrective measures. There

are many important temporary host conditions that affect accidents. Driver-asleep accidents are very common and the disorganization of skills with fatigue or emotional states has been studied; the influence of drugs and that of medication are obviously important causative factors singly and in combination with other agents. A large number of accidents are due to inattention. In addition to fatigue and depressant drugs, inattention can be accentuated by cigarette smoking in a closed car secondary to elevation of carbon monoxide concentration in the blood.<sup>6</sup>

There are many important environmental influences on safe driving. Adverse road conditions and poor driving practices give rise to many serious accidents. The modern system of highways and throughways has resulted in fewer accidents but they are often serious when they do occur.<sup>1</sup> Continued research to improve the design and safety of motor vehicles, including appropriate restraint systems, is an important preventive measure. Investigations of human performance show clearly that driving skill is strongly related to man-machine and man-environment systems and in this the design engineer has a vital role. Thus, while the driver controls the vehicle, his contribution to accidents is not the only one—it must be shared by the car itself, the road and the legal and regulatory systems.

Another type of highway accident that is becoming increasingly common and occurs chiefly in older children and adolescents is motorcycle accidents. There were 1,534 deaths in 1965 in the United States and the number of drivers and passengers killed per 100,000 registered motorcycles was two and one-half times the corresponding rate for all other types of motor vehicles.

The four leading causes of death in motor vehicle accidents are ejection from the vehicle and impacts with the door or side of the car, with the steering assembly and with the instrument panel. It is postulated that 40 per cent of deaths could have been prevented had seat belts been worn and an additional 13 per cent if both seat belt and shoulder belts had been used.<sup>8</sup> There is a compelling need for a broad-scale national campaign to educate the public about the

(Continued on page 441)





Our profession, being scientific rather than a cult, uses scientific principles and knowledge rather than mysticism as a basis for our care of patients.

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In the light of these tenets, it follows that any judgment made regarding the propriety of any physician's services or his fees can properly be made only by his peers in the medical profession.

The privilege and responsibility of peer review has long been accepted by medicine and we must maintain and defend this function.

Sincerely yours,

*Scott Henderson, M.D.*



## The Pediatric Pharmacology Unit of the Children's Memorial Hospital: Studies in Neonatal Pharmacology\*

HARRIS D. RILEY, JR., M.D.  
ROBERT L. HARRIS, M.D.\*\*  
ARTHUR W. NUNNERY, M.D.

*This article provides an up-to-date  
review of selected problems in  
developmental pharmacology and  
neonatal therapeutics.*

*Doctor Riley:* In lieu of our usual procedure of presenting a case at these rounds, it is planned to review some of the aspects of developmental pharmacology and drug therapy in the newly born infant. We could obviously show you many patients who illustrate these principles — in fact, many of the patients in the Children's Memorial Hospital today or any day would serve as examples. Today, we are going to review certain aspects of this topic.

\*From the Department of Pediatrics and the Pediatric Pharmacology Unit, Children's Memorial Hospital, University of Oklahoma Medical Center, Oklahoma City, Oklahoma. Some of the studies cited were carried out in the Clinical Research Center at Children's Memorial Hospital supported by Grant No. FR-62 from the National Institutes of Health. Some were supported by grants to the Pediatric Pharmacology Unit, by Grant No. HD00064 from the National Institute of Child Health and Human Development, and by a grant from the National Foundation supporting the Clinical Study Center for Birth Defects.  
\*\*Fellow in Pediatric Pharmacology supported by Grant No. 5T01HD00064-05 from the National Institute of Child Health and Human Development.

The studies about which you are going to hear today are from the Pediatric Pharmacology Unit here at Children's Memorial Hospital. First, I would like to give a brief background of the organization of the Pediatric Pharmacology Unit, its objectives and activities. For years, it has been appreciated that the young of any species reacts differently to many drugs than does the mature organism; however, the reasons for this are not clear in most situations. In addition comparatively little investigation which could be related directly to the clinical therapeutic problems of the developing human has been carried out. Since pediatricians are intimately involved in the design and conduct of therapeutic programs in the developing human, it follows that the discipline of Pediatrics should assume certain responsibility for leadership in clinical pharmacology and therapeutics as they relate to the fetus, infant and child. This, then, is the fundamental stimulus which led to the creation of the Pediatric Pharmacology Unit. These concepts, the need for a training-research facility and other aspects were discussed with several well-known workers in Pediatrics and in Pharmacology. Following this, a meeting was held with physician-investigators in these fields and in industry and a structure for cooperative participation and support of such a unit developed. The



purposes of the Pediatric Pharmacology Unit are as follows:

1. To conduct research relating to developmental pharmacology and to evaluate new agents anticipated to have pediatric use.
2. To provide education and training to medical students, house officers and others in clinical pediatric pharmacology.
3. To equip pediatricians with appropriate training for subsequent contributions in the field of clinical pharmacology.
4. To improve pediatric therapeutics in our hospital facilities and to extend this experience to other child care institutions.

In regard to the first purpose, you will hear later about some of the studies in progress in the Pediatric Pharmacology Unit. Since the establishment of the Unit, more than 75 different research projects have been completed or are in progress. In this regard I would like to acknowledge the co-operation of our affiliated institutions and investigators whose assistance has made many of these studies possible. From an educational standpoint, members of the Pediatric Pharmacology Unit are concerned with instruction to second, third and fourth year medical students, as well as house officers and others. An important facet of the Pediatric Pharmacology Unit is that it provides research fellowships in clinical pharmacology. These positions are available to physicians who have had clinical training in Pediatrics. During the training period the fellow has the opportunity to receive instructions in biostatistics, experimental design and other areas along with his experience in clinical pharmacology. The need for trained pediatric pharmacologists in universities and in industry is a sizeable one.

Developmental pharmacology might be defined as the study of the various actions of drugs at different stages of development—development carrying the concept of time-dependent systems. Obviously it is closely related to embryology, cellular metabolism and other facets of developmental biology. It is well accepted that the administration of drugs at any age period involves a certain amount of risk, but the hazard increases with the use of therapeutic agents in the developing human—one who exhibits biochemical, tissue and other types of immaturity. Table 1 points out some of the principles

Table I  
FACTORS IN DRUG THERAPY OF INFANTS AND CHILDREN

1. Effects of immaturity on therapeutic response and toxicity.
2. Difficulties in evaluating the effects of drugs.
3. Effects on growth.
4. Influence of disease.
5. Dosage and administration considerations.
6. Differences in reactions.

which must be considered in any therapeutic program involving infants and children. Although none of these can be disregarded in pediatric therapeutics, perhaps the most important single one relates to the effects of immaturity. Some of these relationships are shown in table 2. These effects are most noticeable during the neonatal period which is characterized by dependence upon the maternal organism for nutrition and other needs, rapid physical growth and frequent changes in organ function produced by biochemical fluctuation. These are principles with which we have been concerned here at Children's Memorial Hospital. As Yaffe and Black have stated, too often homeostatic mechanisms of the infant have been overwhelmed by environmental hazards, particularly pharmacologic agents, administered by well-intentioned physicians unaware of the changing host factors previously mentioned. Adverse drug reactions in many instances could have been prevented by an awareness of the physiologic setting in which the drug was prescribed. There are distinct differences between the developing and the mature individual as regards drug absorption, distribution, excretion, as well as metabolism.

The staff of the Pediatric Pharmacology Unit has been interested in and concerned

Table II  
IMMATURITY AND THE RESPONSE TO DRUGS  
Incomplete Development and Maturation of Function of Enzyme Systems  
Organ Function  
Qualitative and Quantitative Differences in Metabolic Pathways of the Infant and Child as Compared to the Adult.  
(A) Altered Sensitivity  
Toxicity  
Acid-Base Derangements  
CNS Effect  
(B) Limited Ability to Detoxify or Eliminate  
Immaturity of Renal, Hepatic, etc. Function  
Incomplete Development or Relative Inactivity of Variety of Enzymatic Processes Concerned with Drug Metabolism.



with many of these problems. Doctor Harris will first tell us of some of the effects of immaturity, particularly as it relates to therapeutics in the newly born.

*Doctor Harris:* There are a number of very exciting areas in neonatal pharmacology which could be discussed but because of time considerations, we will not be able to cover all of them today. Such aspects as teratology, biochemical genetics and placental transfer of drugs each deserves an hour for discussion. However, it is planned to review some of the general physiological and biochemical considerations as they apply to the newborn infant. In a large sense, this is the way neonatal pharmacology got its start—in an attempt to explain the well-known clinical fact, which Doctor Riley has brought out, that the newborn infant, the premature infant and particularly the fetus differ so markedly in their pharmacologic response as compared to the adult. This entire area was, for a long time, of academic interest only; however, the thalidomide disaster and the observation that the “gray syndrome,” to be described subsequently, is etiologically related to the administration of chloramphenicol in the newborn, have underlined the clinical, practical importance of investigation in this broad area.

If the types of response which the newborn, as compared to the adult, exhibits are broken down into different categories, probably the most common is the one in which the neonate shows a response qualitatively similar to that of the adult but exaggerated in degree. An example of such a response is that associated with the use of morphine in the neonate. The infant responds in the same manner as the adult to morphine, but he is much more sensitive to the effects of the drug. A less common type of response is that in which the infant or child responds qualitatively in a similar manner, but appears to be more tolerant to the effect of a given drug. The response of the fullterm neonate to digitalis is such an example. Subjects in this age group require a larger digitalizing dose on the basis of surface area or body weight than does the adult. A less common response, but perhaps a more interesting one, is the so-called idiosyncratic response. In this situ-

ation the response in the infant or child is completely unpredictable on the basis of normal adult pharmacology. Such a response is responsible for the so-called “gray syndrome” characterized by vascular collapse in the infant in association with chloramphenicol therapy. To my knowledge this syndrome has never been reported beyond the first few months of life. In addition to these responses, the response of the infant and child may be similar to that of the adult except that the therapeutic response is prolonged. A classical example is the response of the young infant to penicillin. Of course in this case it is a blessing because it permits the administration of aqueous penicillin in the neonate every 12 or 24 hours instead of every four, six or eight hours as is necessary in the older child. Figure 1, derived from animal data, emphasizes this principle. Although there are relatively little human data available, all pediatricians are familiar with this therapeutic principle. As shown in certain instances the drug appears to be better tolerated by the newborn of the species than the adult and in other cases the drugs are more toxic in the young than in the adult. However, as the young organism ma-

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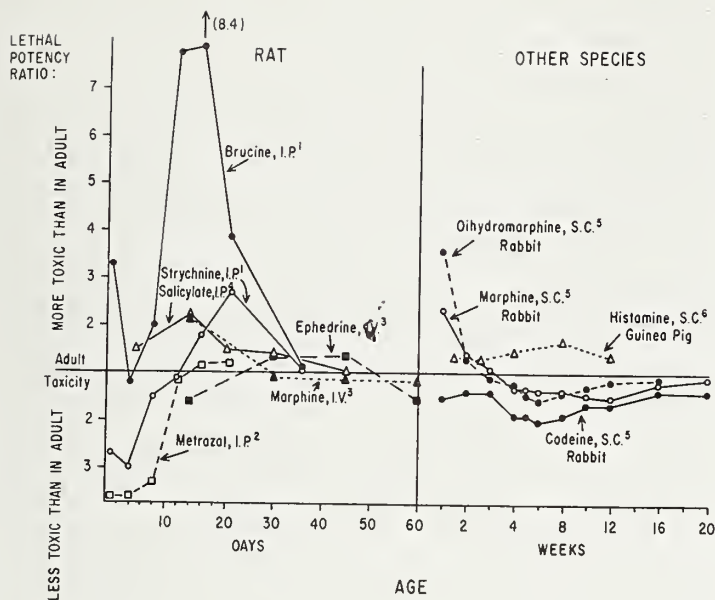


Figure 1. The Relative Toxicity of a Variety of Drugs as a Function of Maturity in the Rat, Rabbit and Guinea Pig. Reproduced from Done, A. K.: Clinical Pharmacology & Therapeutics 5: 432, 1964, with permission of author and publisher.

tures, the drug responses approach the adult mean in both cases.

In summary, the response of the immature organism may represent either an increase or a decrease in toxicity, a prolonged therapeutic effect or a totally unpredictable response. To understand why this is so it is necessary to review certain basic pharmacologic considerations. Figure 2 is a simple dose-response curve. Administration of a drug to an organism at any stage of development results in a serum level of the drug as a function of time. A curve characterized by a rapid rise and plateauing, and if no further drug is given, a slow fall-off in serum

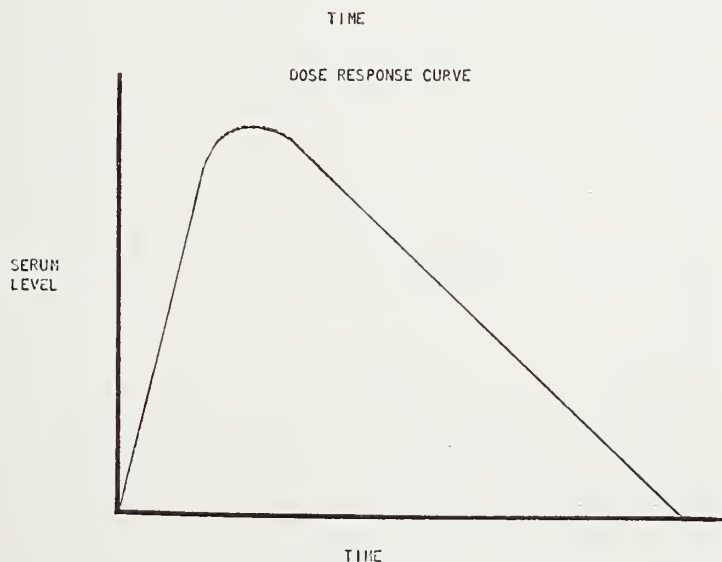


Figure 2. Serum Level as a Function of Time after a Single Dose of Drug.

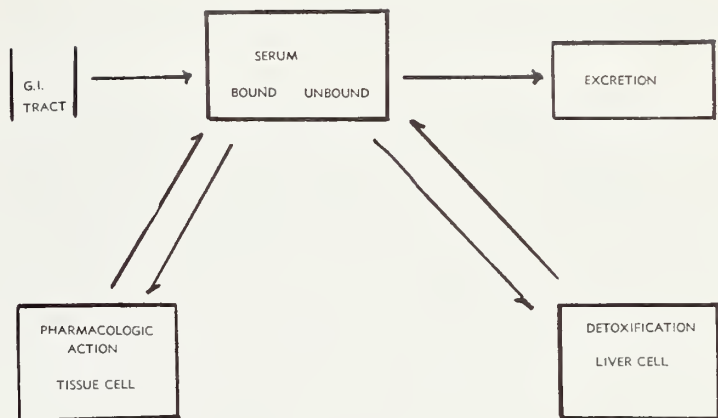


Figure 3. Schematic Representation of Drug Fate from Administration to Excretion.

level is obtained. This is true irrespective of the stage of maturation or of type of organism or type of drug. The curve may be prolonged or the slopes may vary but the general form is the same. To explain this phenomenon, various types of processes involved must be analyzed. Figure 3 is a crude attempt to trace what happens to the drug from the time of administration to the moment it is eliminated. After administration, either by injection or by the oral route, it passes into the blood stream. There it splits essentially into two forms—a free unbound form and a bound form. The binding is primarily to the serum albumin and perhaps to a smaller extent to some of the globulins. These two forms of the drug are in equilibrium in the serum. A further equilibrium is then established between the unbound form in serum and in various tissue cells, usually the liver, a further reaction occurs and the drug is changed chemically. This changed form is in equilibrium with the serum, and eventually both the free drug and the changed (detoxified) form of the drug are excreted from the body. Excretion usually takes place by way of the kidney but depending on the type of drug, excretion may occur by way of the lung, the bile, or the intestine.

The newborn infant responds differently from the adult and thus somewhere along this scheme of things there has to be a difference in metabolism between the newborn infant and the adult. When we go back and trace this scheme, with particular emphasis on the newborn or immature infant, we are able to get some understanding of how this response occurs. In the first place, when the drug is administered orally, there are cer-



tain differences in the immature organism. For example, there are certain enzymatic deficiencies in the intestinal tract and the integrity of the intestinal mucosal wall is somewhat comprised in the newborn infant. Neither of these differences, however, explains to any significant degree the marked differences in the pharmacological response as compared to the adult. The drugs used most frequently are in general relatively simple chemical molecules. It is not necessary that they be further broken down; however, if this occurs they are usually rendered physiologically inactive. Moreover, the fact that the intestinal mucosal wall will probably permit diffusion of high molecular weight substances in the newborn infant is of no particular importance either, because most of the drugs used are relatively low in molecular weight. Thus, except in certain situations, variations in intestinal absorption can probably be disregarded as an explanation of the difference between the pharmacologic response in the newborn and in the adult. When the drug enters the blood stream of newborn, it is bound to a protein to a certain extent just as occurs in the adult. It is true that the total serum protein of the fullterm newborn is about 5.5 gm/100 ml and in the large premature approximately 4.5 gm/ml—the values in both being lower than in the adult. Except in special instances, however, the increase in serum protein does not apparently account for any marked change. Silverman, *et al.*,<sup>1</sup> and Kantor, *et al.*,<sup>2</sup> pointed out that the use in the newborn of absorbable sulfonamides, such as sulfisoxazole, may be accompanied by serious clinical sequelae including an increased incidence of kernicterus in the face of a falling level of bilirubin in the serum. This seemingly paradoxical situation was explained when it was found that sulfonamides compete competitively with bilirubin for the binding site on the albumin molecule. The bond between the sulfonamide and the albumin molecule is a more fastidious one than the bilirubin-albumin bond and therefore bilirubin is effectively displaced. The increased amount of unbound bilirubin then is able to diffuse into the cells resulting in a decrease in serum bilirubin but with an in-

crease in tissue cell bilirubin followed by the development of kernicterus. It may be that the decreased level of serum albumin in the newborn infant, particularly in the premature, may play a part in this by decreasing the number of binding sites available for bilirubin. Except in special cases such as this, however, the somewhat lower serum albumin does not constitute a real problem.

When a drug is traced into the tissue, several other interesting phenomena are observed as exemplified in salicylate intoxication. In the child with salicylism, two of the major physiological derangements are (1) acidosis and, (2) respiratory stimulation. With a comparable serum level of salicylate in the adult, however, acidosis is not seen although respiratory stimulation may occur. The entire reason for this is not completely clear, but apparently there is an interference with carbohydrate metabolism in salicylism in the child that either does not occur in the adult, or occurs to such a limited degree as not to be clinically apparent. The same level of the drug in one tissue will give the same response in the adult and child, but in another tissue a depressed response in the adult, or an exaggerated response in the child. Another example of tissue specificity is that seen following the administration of morphine. The exaggerated response to morphine which the newborn exhibits can be related to tissue diffusibility. Morphine diffuses rather rapidly in the newborn brain—more so than in the adult. This process seems to be inversely proportional to the completeness of myelination—an index of maturity—of the central nervous system. Myelination is usually complete at three to four years of age, and the response to morphine at this age is essentially the same as in the adult. In the newborn—following a certain dose of morphine, and if tissue levels are determined at any time thereafter—much higher levels of morphine are found in the central nervous system than in the adult.

These are interesting facts, but do not materially aid our general understanding of physiologic immaturity. To understand this better it is necessary to look at the end of the scheme outlined in figure 3 and consider excretion and detoxification. Glomerular filtration in the fullterm neonate averages



about 30 to 50 per cent that of the adult. Liver function is even more depressed. These are facts of which all pediatricians are aware. Despite this however, it was not until recently that its importance was appreciated. A classic example of the clinical expression of these developmental differences is found in the "gray syndrome" associated with the administration of chloramphenicol. The syndrome is characterized by the occurrence in the newly born infant of abdominal distention, irregular respirations, an ashen gray cyanosis associated with circulatory collapse and often a fatal termination 48 to 72 hours following the initiation of treatment with chloramphenicol. It is interesting that the elucidation of the "gray syndrome" came about through a study of epidemiologic data rather than by any close observation of nursery technique. From 1952 to 1956 the newborn mortality rate in this country was about 26 deaths per 1,000 live births; in 1957 it rose to 26.4 and in 1958 to 26.9—a highly significant increase. Analysis of these rates revealed that the primary increase had occurred in one group—infants receiving antimicrobial therapy because of premature rupture of membranes in the mother. The mortality rate in this particular group rose in the period 1952 to 1956 from 29 per 1,000 live births to 144 per 1,000 live births in 1958. After analysis of various influences, it became obvious that the only significant difference in medical practices was the use in 1958 of chloramphenicol for this purpose in contrast to its lack of use in 1954. Further study revealed that infants dying with this symptom complex had markedly elevated serum levels of chloramphenicol and its degradation products. This fact was publicized, of course, and the use of chloramphenicol in the newborn was markedly curtailed. Physicians confidently pointed to the fact that these infants had decreased or compromised renal function impairing the excretion of the drug and that this must be the reason they exhibited such high serum levels. Of course, this plays a part because at least 90 per cent of chloramphenicol is excreted within 24 hours by the adult but less than 50 per cent is excreted by the newborn in a similar period. This is not the whole story, however, because the "gray syndrome" is unknown in the adult despite

the fact that levels of chloramphenicol comparable to those in the newborn with this disorder are seen in older patients with marked renal impairment. Further examination revealed that there is a difference in the form of the drug present in the adult and that in the infant. In the infant the drug is present almost entirely as the free form of chloramphenicol glucuronide. Therein lies the story of detoxification.

Before going further, it is pertinent to comment on why detoxification is necessary (figure 4). Most drugs, except perhaps the very elemental particles such as iodides and bromides, are detoxified in the body. The reason for this is that most drugs administered are non-polar chemicals, that is, they are soluble in lipids and organic solvents and they are relatively insoluble in aqueous solution. When such a drug is filtered through

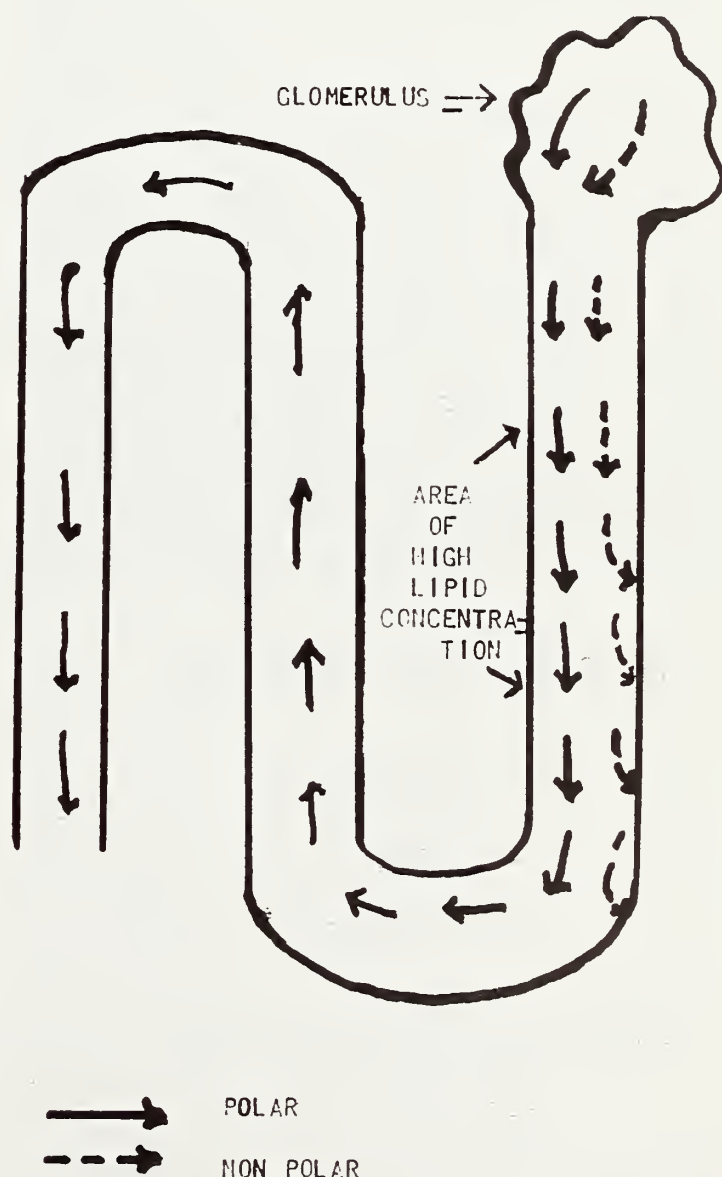


Figure 4. Diagrammatic Illustration of the Fate of Polar and Non-Polar Compounds in their Course through the Nephron.



the glomerulus, it comes in contact with the kidney tubular cells which contain large amounts of lipids. These therapeutic agents are then dissolved in the lipids of the tubular cell walls and are returned to the circulation. The excretion of such a product is very inefficient. If something could be done to the drug to alter it so that it is polar rather than non-polar in chemical character and therefore more soluble in aqueous solutions such as the glomerular filtrate, then the efficiency of excretion would be markedly increased. This is an oversimplification, but is basically the objective of detoxification. There is apparently a two-stage reaction in the human being, which we call phase 1 and phase 2 (figure 5). The phase 1 reactions serve essentially to put a "handle" on the drug. I have used the old organic chemical symbol of R for an organic molecule. Some form of "handle" is then attached to the R moiety. Whether this is an OH-radical, NH<sub>2</sub>-radical, or COOH-radical makes little difference. In the second stage of the reaction, a highly charged or highly polar moiety is attached to this "handle" and the end result is a polar molecule, as opposed to the original non-polar molecule. These reactions are, of course, enzymatic in nature. It is interesting that physiologically the most important of phase 1 reactions are oxidative. Most of these reactions in the newborn or the immature organism are depressed, probably because of the reduction or deficiency in the

enzyme system responsible for such reactions.

There are other reactions in addition. The hydrolytic reactions appear less important and are also the ones which appear to be least impaired in the newborn. With phase 2 reactions, glucuronide interactions such as those responsible for detoxification of bilirubin and chloramphenicol are probably the most important. There are other interesting facets of such chemical processes. In general, the R-form or the free drug is the most toxic portion—more than either the phase 1 or phase 2 products (figure 5). Since both phase 1 and phase 2 reactions are generally depressed, it follows that the newborn infant will be much more susceptible to the effects of administered drugs because at any given time more of the free drug will be available than either of its products. This is not always the case, however, since occasionally the free form of the drug may be less toxic than its metabolic products. In this situation the immature organism will be less susceptible to the effects of most therapeutic agents than will the adult because at any given time a proportionately larger amount of the less toxic form exists in the developing subject. It is likely that this is the explanation for lower incidence of toxicity associated with the use of kanamycin in the newborn as compared to the adult. This also apparently explains qualitatively the idiosyncratic type of response which is occasionally observed. Assume that the free form of chloramphenicol in high doses can cause the "gray syndrome." The newborn would be more susceptible to its effect since the normal adult is able to detoxify the product very quickly to the glucuronide form and thus prevent the idiosyncratic type of response and the "gray syndrome." I suppose it would be possible, if such a clinical situation ever presented, to induce the "gray syndrome" in an adult with the Crigler-Najjar syndrome and impaired renal function. This possibility exists, but to my knowledge has not been observed, because the Crigler-Najjar syndrome is characterized by a deficiency of glucuronyl transferase and thus an inability to detoxify free chloramphenicol. This model also helps to explain the prolonged therapeutic response which the new-

#### PRINCIPAL PHASE 1 REACTIONS

1. OXIDATION
2. REDUCTION
3. HYDROLYSIS

#### PRINCIPAL PHASE 2 REACTION

##### GLUCURONIDATION

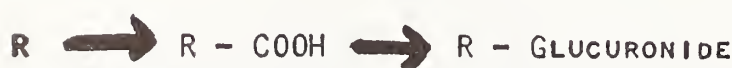


Figure 5. The Two States of Detoxification Reactions.



born exhibits to penicillin. Relatively high levels of penicillin in the serum are found as a reflection of the decreased renal excretion. An understanding of this type of detoxification reaction is helpful in explaining the different physiological and biochemical responses exhibited by the neonate. As mentioned above, it is believed that a deficiency in maturation of enzyme systems or of the enzyme itself is responsible for most of the differences. However, this is not the entire story. It is possible for an enzyme to be present in normal amounts and at the same time be unable to exert its physiologic role because of other factors that are operating. For instance, if an inhibitor to the enzyme system is present, the same type of reaction may occur. Such an occurrence may ensue after the administration of novobiocin in the neonate. The chief clinical manifestation in this situation is the development of jaundice. The enzyme, glucuronyl transferase, is present in normal amounts, but novobiocin inhibits it to produce the same effect as if the enzyme was absent or deficient in amount.

Another recently defined and interesting clinical syndrome relating to the biology of this enzyme is the occurrence of hyperbilirubinemia in normal infants who are breast fed. Such infants appear to have physiological jaundice, except that the jaundice persists for a prolonged time—it has been observed in infants up to six or seven weeks of age despite the presence of normal levels of glucuronyl transferase. Arias, *et al.*,<sup>3</sup> recently isolated a substance, a 3-alpha-20 beta pregnanediol, which is excreted in the mother's milk and is a potent inhibitor of glucuronyl transferase. The treatment is obvious—discontinuation of breast feeding for the duration of excretion of this material in the breast milk.

Another clinical example relates to the use of vitamin K analogues in the newborn infant. A few years ago when large doses of vitamin K (menadiol sodium diphosphate or menadione sodium bisulfite) were administered routinely to the mother during labor or to her infant to protect against hemorrhagic disease of the newborn, hemolytic anemia and icterus were observed not infrequently. Vitamin K is a non-competitive inhibitor of glutathione reductase. Al-

though the reason is not entirely clear, reduced glutathione is necessary for integrity of the red cells. In the presence of decreased concentration of this substance, the red cell becomes more prone to hemolysis. The use of another analogue, vitamin K<sub>1</sub> (phytonadione) in a dose of 0.5 mg/kg has been shown not to induce hemolysis but to prevent the occurrence of hemorrhagic disease of the newborn. A similar mechanism operates when a co-factor rather than an enzyme is deficient. In the face of normal amounts of enzyme and in the absence of an inhibitor and absence of the co-factor needed by the enzyme, a similar chain of events may occur. In the case of glutathione the co-factor is TPNH. Only a few metabolic processes, chiefly those involved in the breakdown of glucose to lactic acid, yield TPNH. Hemolysis and clinical hyperbilirubinemia has been observed in infants and children with a congenital deficiency of glucose-6-phosphate-dehydrogenase.

What is the therapeutic approach to such problems? If an inhibitor is present, it often is simple to remove the source of it such as termination of breast feeding to manage the jaundice in such situations as previously described. Other clinical problems may be prevented—for example, the use of the proper form and dose of vitamin K<sub>1</sub> or avoidance of the use of novobiocin in the neonatal period. In the laboratory, attempts are being made to induce artificially the production of enzymes. For instance, artificial stimulation of the production of glucuronyl transferase at a more rapid rate than normally occurs would solve many of the problems of neonatal hyperbilirubinemia. Recently it has been reported that treatment of a hyperbilirubinemic infant with phenobarbital apparently resulted in induction of a glucuronide-conjugating system.<sup>4</sup> However, a key feature to be determined in such situations is proper identification and quantitation of the enzyme as well as determine if more than a single enzyme is involved. There are also other examples which could be cited.

Finally, the teratogenic influence of certain therapeutic agents should be mentioned. It is not entirely hypothetical to suggest that we perhaps have been lulled into a false sense of security in this regard. A recent



survey has shown that 92 per cent of women have at least one drug prescribed by their physician during pregnancy and 3.9 per cent are given ten or more. The number of anatomic teratogenic relationships to drugs administered to the mother during pregnancy has steadily grown.<sup>5</sup> Because organogenesis is apparently complete by three or four months of gestation, the feeling is widely prevalent that drugs administered to pregnant women after this time are safe from teratogenic effects. This may not be true, however, because most enzyme systems do not truly begin to function in the fetus until about the seventh month of gestation. Thus, the last trimester of pregnancy is the most important in terms of the production and maturation of enzyme systems. It is entirely possible that certain drugs may interfere with the production of enzyme systems. It may be that the last trimester of pregnancy may be the most hazardous from the point of view of physiologic teratology just as the first trimester is in terms of anatomic teratology.

*Doctor Riley:* Thank you for that excellent discussion, Doctor Harris. I would like to add also that two other commonly used antibiotics may induce serious untoward effects in immature subjects. Many infants receiving the usually recommended dose of streptomycin have exhibited stupor, flaccidity and sometimes coma with deep respiratory depression. Treatment of premature infants with tetracycline for a period as short as nine to 12 days has produced a decrease in the rate of bone growth of 30 to 60 per cent. Ultimately this results in a retardation of total body growth.<sup>6</sup> In addition to the examples which Doctor Harris has given, there is also evidence of defective hepatic microsomal enzyme systems in the newborn which are essential for the metabolism of certain other agents. Some of these drugs are aminopyrine, amphetamine, chlorpromazine, hexabarbital and phenacetin. Done<sup>7</sup> in an excellent review article on developmental pharmacology has discussed in detail other therapeutic agents which may have an adverse effect in immature humans.

Doctor Nunnery, would you comment on dosage considerations.

*Doctor Nunnery:* Any discussion of neonatal pharmacology would be incomplete without consideration of differences in dosages of therapeutic agents required by infants, children and adults. It is essential to have a practical, reliable method of determining proper drug doses in individuals of different ages. There are many old, empiric rules whereby the dose for children of various sizes can be estimated. These have been replaced almost entirely by approaches which provide dose information with respect to some mutual parameter which may be estimated in both the child and the adult. But which gives the most optimum dose? The difference obtained by various methods may not be great in older children but in infants, especially the neonate, it is crucial. A dose of a therapeutic agent for a newborn on the basis of weight proportions is approximately one twenty-first that for the adult, whereas a dose calculated on a length relationship is a little less than a third that for the adult. Similarly, a dose based on the surface area relationships is also different and is one-third that obtained by using length and twice that obtained by using weight. This is usually satisfactory for older infants and children but not for the newborn. Surface area becomes the critical measurement relating the response the baby is going to exhibit to the drug. Why surface area? Many body functions—glomerular filtration rate, caloric output, nutritional requirements, in fact, almost all metabolic processes—are directly correlated with surface area in almost a linear fashion. But to correlate them to body weight alone the hundredth root of the seventy-fifth power of the weight must be extracted. What difference does this make? Little in large children and even less in adults, but in the small infant it may be quite important, as is seen in figure 6. For the purpose of discussion, consider a dose of kanamycin of 8 mg/kg for an adult; this is equivalent to 4.4 mg/m<sup>2</sup>. When dose is calculated by surface area, a 5 kg (a little over ten pounds) baby would require twice the dose (17 mg/kg) and a 3 kg (a little over six pounds) baby would require 21 mg/kg, almost triple the adult dose. In other words,



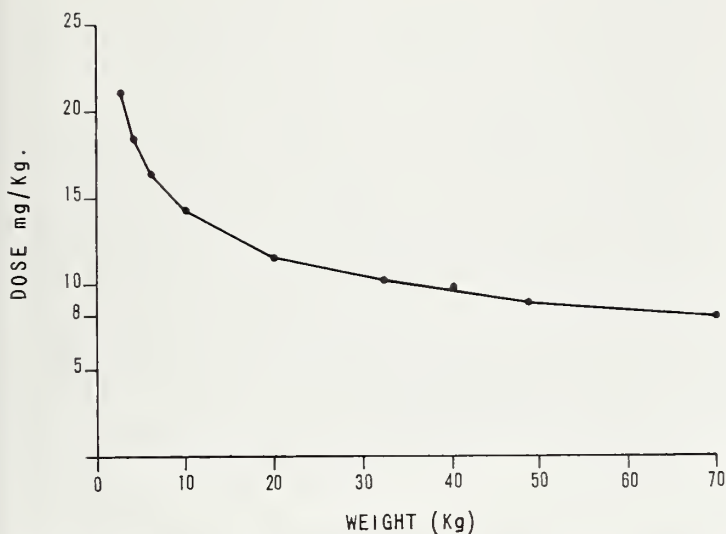


Figure 6. Dose in Mg/Kg in Relation to Various Weights.

a baby weighing about six to ten pounds and receiving the dose recommended for older children by weight is getting but one-third to one-half the dose which has been shown to be therapeutic. This is but one reason the term “therapeutic orphan” has been coined. The physician may be quite confident that he is administering the optimum agent in the proper dose when the infant is in fact receiving only one-half to one-third the dose actually needed.

When should these dose adjustments be used? Certainly not in every child. It is usually not necessary in children receiving a drug with little potential toxicity such as the penicillins, as long as one is alert to the fact that the likelihood of insufficient dose becomes more likely in patients weighing less than approximately 20 kg. However, with drugs with toxic effects at varying doses such as streptomycin, kanamycin, digitalis, the barbiturates and anticonvulsants, appropriate adjustments based on reliable methods become extremely important. Dosage of any potentially toxic drug should be calculated on the basis of surface area for any infant or child with relatively normal renal and hepatic function who weighs 20 kg or less, particularly in the face of a serious illness which may further compromise the metabolism or excretion of the agent.

What then is the best method of dosage calculation in such patients? We use a simplified normogram first described by Glazko<sup>s</sup> (figure 7). Utilizing only the infant's weight and the dose in mg/kg for older children or adults, the corrected dose can be obtained.

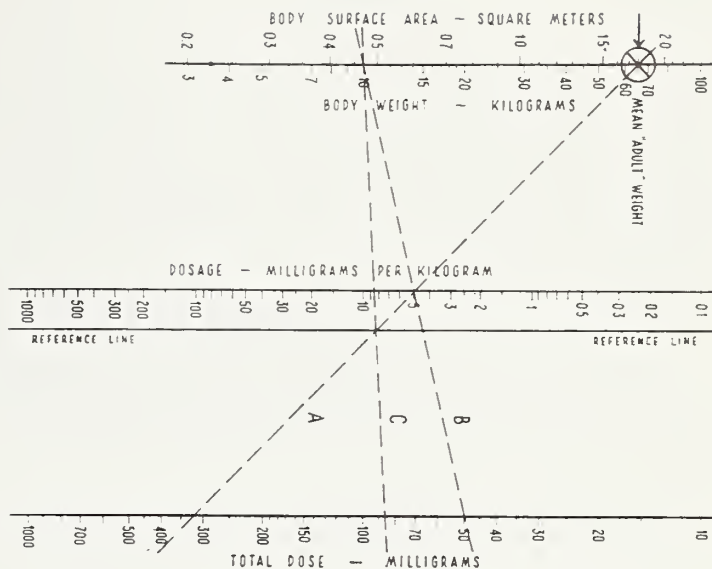


Figure 7. Simplified Nomogram for Calculating Drug Dosage from Body Weight or Surface Area in Infancy and Childhood. Reproduced from Glazko, A. J.: Pediatrics 27: 503, 1961, with permission of the author and publisher.

It allows calculation of accurate doses in mg/kg/day, negating the necessity for the physician to relearn all dosages on the basis of “per meter square.” The use of this normogram is not nearly as complex as it appears. For example, the dose of dilantin in a 70 kg adult is 5 mg/kg/day. In a 10 kg or 22-pound baby the dose as calculated by weight alone would be 50 mg/day. When corrected using the reference line, on the graph, the calculated dose is almost 90 mg/day. The magnitude of the difference for successful therapy is obvious. We have all used phenobarbital to control convulsions in the newborn and are aware of the relatively large amount of drugs required. However, this dose is not nearly as large once it is adjusted for the true rate at which the baby utilizes it. In addition to providing a more rational approach to therapy, use of such parameters also permits more logical consideration of the margin of safety of agents which have considerable toxic potential.

*Doctor Riley:* Are there any questions for Doctor Harris or Doctor Nunnery? Although it is of crucial importance, time does not permit discussion of fetal pharmacology which, of course, involves the problems relating to administration of drugs to the mother during pregnancy and the effect on the fetus. As Doctor Harris mentioned, a separate hour would be spent on this topic. In conclusion, it is clear from this discussion but it deserves continued emphasis that therapeutic regi-



mens for infants and children cannot be based on extrapolations from findings in adults but must be based on studies of the particular agent in the immature organism. □

#### ACKNOWLEDGMENT

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Please contact George H. Garrison, M.D., Chairman of the Medical Heritage Committee of OSMA, Palmer Howard, M.D., Professor of History of Medicine, or Mr. Leonard Eddy, Medical Librarian, University of Oklahoma Medical Center, 800 Northeast 13th Street.



# Palliation of Breast Cancer

ROBERT L. SCHMITZ, M.D.

*Breast cancer which is too extensive for surgical removal is by no means hopeless. Many years of comfortable, useful life can be salvaged for these victims by a variety of palliative measures.*

ONE FEELS almost apologetic for discussing such a trite topic as the palliation of breast cancer, especially if he has nothing new to add on the subject. But so much can be done for patients with incurable breast cancer, so many active, happy years can be added to their lives, that we must constantly remind ourselves to be aggressive and enthusiastic in our approach to this problem.

The principal measures available to us may be considered under these headings: Analgesic Drugs, General Surgery, Irradiation, Steroid Hormones, Endocrine Ablation, Chemotherapy and Neurosurgery.

## ANALGESIC DRUGS

For the relief of pain, we avoid strong narcotics until the disease reaches a terminal

stage. Often the physician panics when the patient or relatives make an issue of suffering and prescribes narcotics too soon. But then addiction results and it is a serious problem because the patient rapidly becomes demoralized and unmanageable. So one should go slowly with the use of narcotics.

We start, rather, with the salicylates and their relatives, progressively include various sedatives of the barbiturate and bromide families in gradually increasing dosage, move along to the codeine family added in graduated dosage, and then to the chlorpromazine family and increase the dosage levels as high as 100 to 150 mgm. every four hours. We wait until the patient is clearly in a pre-terminal stage before including narcotics such as dihydromorphinone, pantopon or levorphanol tartrate.

## GENERAL SURGERY

General surgical measures may be applied to the primary tumor, to a local recurrence, to a regional recurrence or to a solitary metastasis.

When the clinical stage of the cancer precludes a radical mastectomy, the primary tumor may be removed by simple mastectomy, provided it is small enough to be removed without skin grafting and without too much likelihood of local recurrence. In bulky primary cancers, x-ray therapy is preferred.

Presented at the Oklahoma City Clinical Society Fall Conference, October 2nd-4th, 1967, in Oklahoma City.



Excision of small recurrences in the flaps of the scar of a previous radical mastectomy is definitely of value. Patients have lived many years after excision of such lesions. If the flaps are thin and cannot be undermined for closure without danger of sloughing, the defect can be left open to heal by secondary intention or it may be covered by a small split graft. Wider excisions and larger grafting procedures are not worthwhile.

Occasionally, a regional metastasis to the supraclavicular nodes, to the opposite breast or axilla, or to the soft tissues of the thorax will lend itself to excision.

Distant "solitary" metastases may occur to the lungs, bones or ovaries in such a way that excision is justified or necessary. The results are usually disappointing in breast cancer as compared to those in colon cancer or sarcomas.

#### IRRADIATION

X-ray, radium, cobalt and various other isotopes are available sources of x-radiation which may be applied to the primary lesion, to a local recurrence, to a regional recurrence and to various metastatic lesions, especially those to bone and lung. It is probably the best single modality for palliation we have since it is effective about 75 per cent of the time in contrast to other measures we use which are effective 20 per cent to 40 per cent of the time.

Most primary lesions that are inoperable are too bulky for simple mastectomy but lend themselves well to x-ray or cobalt therapy.

Local recurrences also respond well, usually.

Regional recurrences to supraclavicular nodes, the internal mammary chain or the opposite breast or axilla are much more resistant but may respond.

Probably, the best indication for the use of x-radiation is the painful bone metastasis. In such cases, pain will be relieved in 85 per cent of instances often with recalcification of the bone even when a pathologic fracture is present.

If more than a few bone lesions are present, it is impractical to attempt to irradiate them all, then P32 can be administered for a generalized effect but since it irradiates all of the bone marrow it must be used cautiously or aplastic anemia will follow.

X-radiation is not often used for extra-skeletal metastatic disease because of the deleterious fibrosis it produces but it may be applied to brain metastasis to control convulsions, to liver metastasis to relieve pain and to lung metastasis for intractable cough.

Radioactive isotopes such as Au<sup>198</sup> can be used to control ascites and hydrothorax but chemotherapeutic agents are simpler to handle and less expensive to use.

#### STEROID HORMONES

Androgens, estrogens and corticosteroids are the hormones that help the most. They are reserved for patients with generalized spread of cancer; they give subjective improvement in about 40 per cent of cases and objective improvement in about 20 per cent.

Various recommendations have been made for selection of the appropriate hormone such as the site of the metastases, whether in bone, soft tissue or viscera, or the presence or absence of estrogen effect in vaginal smear or by provocative testing with the patient under controlled calcium intake. But in our experience, a trial and error approach has not led to any problems and has given effective results. We use the patient's menstrual age as an indicator.

In the patient who is still menstruating or who is less than five years beyond her menopause, androgens are the hormone of choice, regardless of whether the metastases are in soft tissues, viscera or bone. We administer repository testosterone intramuscularly at biweekly intervals in 200 mgm. doses. (This is a much simpler regimen than aqueous solutions thrice weekly.) These patients develop hirsutism, deep voice, acne, hypertrophy of the clitoris, muscularity and increased libido. We have been reluctant to use the less virilizing synthetic androgens until they are proven to be just as effective.

In the patient who is five years or more beyond her menopause, estrogens are the hormone of choice regardless of the site of her secondary disease. We administer en-



teric-coated diethylstilbestrol orally three times a day after meals in five mgm. doses.

If the patient becomes nauseated at first, estrogens are given parenterally in repository form until she can tolerate them orally. The most disturbing side-effect of estrogens is uterine bleeding which often occurs when they are used for long periods; it may necessitate dilatation and curettage to control it and to rule out endometrial carcinoma.

If the hormone of first choice does not produce benefit within 12 weeks, we switch to the opposite one without waiting.

If the hormone selected as first choice does produce benefit, it is continued without interruption for as long as the benefit continues, for five years in several of our cases. When the effectiveness is lost, we stop the hormone and give no substitute for a while because a "rebound" remission may accompany the withdrawal. While this benefit usually lasts only three to six months, it may last a year and in one of our current cases, 18 months to date.

Finally, when any favorable response to androgens and/or estrogens is over or if there has been no response to either at all, corticosteroids are used. We usually employ prednisone by mouth five mgm. three times a day. After several months these patients show the clinical features of Cushing's syndrome.

Any of these hormones may cause sodium retention and edema. Diuretics will usually control this situation. Occasionally, hypercalcemia develops. It is a serious complication and difficult to control.

#### ENDOCRINE ABLATION

Three endocrine ablation operations can be of help: Oophorectomy, Adrenalectomy and Hypophysectomy.

Castration can be accomplished surgically or by irradiation. The urgency of the situation, the age of the patient and her general health are factors in making a choice. We do not do castration prophylactically on all pre-menopausal women with breast cancer; the side-effects are undesirable and the results are equally good when done later on in those cases that require it. But it is advised for all women with advanced breast cancer

or with recurrent disease who are not yet five years beyond the menopause.

About one-fourth of patients generally and about one-half of those who have had a good response from castration, will derive benefit from adrenalectomy. We use an anterior, trans-abdominal approach since both adrenals and the ovaries, if still present, can be removed at the same time. As we have mentioned above, in the pre-menopausal patient, oophorectomy alone is done as a first stage. Only if there is a good response for at least six months will adrenalectomy be advised. In the post-menopausal patient who is adrenalectomized, the ovaries are removed simultaneously when they are still in.

The results from hypophysectomy are essentially identical to those from adrenalectomy. There is, however, considerable difficulty in doing an adequate removal of the pituitary and so various alternatives such as external irradiation or radioactive implants have been devised. If the means for adrenalectomy are at hand, one need not be concerned with hypophysectomy.

#### CHEMOTHERAPY

The chemotherapy of breast cancer is quite unsatisfactory. But when all other modalities have been exhausted, we turn to it. It may relieve pain for a short time in about 15 to 20 per cent of cases by causing regression of tumor, but there is no significant extension of life.

At present, we use cyclophosphamide (Cytosan). A loading dose of 200 mgm. daily for five days is given intravenously and then a maintenance dose of 50 to 100 mgm. daily by mouth attempting to keep the

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*Robert L. Schmitz, M.D., a 1938 graduate of the University of Chicago School of Medicine, has been certified by the American Board of Surgery. He is now Professor of Surgery at Loyola University Stritch School of Medicine.*

*Doctor Schmitz is a member of the International Surgical Society, the American College of Surgeons, the Western Surgical Association and the Central Surgical Association.*



white blood count suppressed to 2,000 to 3,000.

For hydrothorax from pleural metastases, we instill nitrogen mustard intrapleurally and the next day insert a thoracotomy tube connected to a water seal bottle. The lung usually re-expands forcing out the fluid and the visceral and parietal pleurae fuse to obliterate the space and prevent the reformation of the hydrothorax.

NEUROSURGERY

Intractable pain unrelieved by the foregoing methods may require the help of the neurosurgeon. Cordotomy, tractotomy and

lobotomy are used depending on the site of the pain.

MALE BREAST CANCER

Cancer of the male breast is rare but the prognosis is grave and note should be made that it also responds to measures equivalent to those used in women, *i.e.*, administration of estrogens, orchiectomy and adrenalectomy.

SCHEDULE FOR PALLIATION

Now that we have reviewed the various palliative measures available to us, we need a schedule or system for applying them. The following chart presents our method. □  
55 East Washington, Chicago, Illinois

SCHEDULE FOR PALLIATION OF BREAST CANCER

	Pre-menopausal Patient	Post-menopausal Patient
Inoperable Primary Lesion	1. simple mastectomy or 2. irradiation plus 3. castration	1. simple mastectomy or 2. irradiation plus 3. estrogens
Local or Regional Recurrence	1. surgical excision and/or 2. irradiation plus 3. castration	1. surgical excision and/or 2. irradiation plus 3. estrogens
Generalized Metastases	1. castration 2. if it helps—androgens or adrenalectomy 3. if no help—corticosteroids 4. chemotherapy	1. estrogens 2. if it helps—androgens or adenalectomy plus oophorectomy 3. if no help—corticosteroids 4. chemotherapy

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# The Diagnosis of Cerebrovascular Disease (CVA)

OSCAR SUGAR, M.D.

*Clinical neurological study should be followed by lumbar puncture in every case of "stroke" (CVA). Definitive diagnosis and treatment most of the time (except in moribund patients) also requires cerebral angiography.*

THE MANIFESTATIONS of cerebrovascular diseases may be divided, for the purposes of this occasion, into acute and chronic disorders. This is confusing of course, since the most common cerebrovascular disorder is a chronic one, arteriosclerosis, which makes itself known most often by an acute attack, commonly called a "stroke" or "c.v.a." There are many other types of cerebral vascular disease, which include rarities such as endarteritis due to syphilis, tuberculosis, and the strange occlusive disease of young Oriental women, called the pulseless disease (of Takayasu). Arteritis of cerebral vessels may be part of a collagen disease, a reaction to cigarette smoking (Buerger's disease), or it may occur during febrile illness, particularly in children. Congenital lesions range from

common anomalies of the circle of Willis, to anomalies of formation of the embryologic vascular network (arteriovenous malformations). In between is the very common cause of bleeding in the head, the intracranial aneurysm, which probably has its origin in an embryonic defect in the wall of a blood vessel, but probably also has some degenerative change with weakness of the walls, to produce a blowout and bleeding. A number of disorders of the blood vessels of the brain have no known origin; the most prevalent of these is migraine.

Most of the truly chronic vascular diseases produce slowly progressive neurological syndromes, which include that gradual deterioration of mental and physical function called senility (or arteriosclerotic dementia), Parkinsonism, pseudobulbar palsy, thalamic syndrome, etc. Most of these are diagnosed on a clinical basis by neurological examination and by excluding other causes such as brain tumors, clots, etc.

Some of the chronic vascular disorders including occlusive disease, can be diagnosed (or a hint may be given) by an instrument, widely used among general physicians, but only recently reintroduced into the armamentarium of the neurologist, the stethoscope! In adults, bruits heard over the great vessels in the neck may indicate turbulence of stream flow due to partial obstruction from arteriosclerosis. There is no one-to-one

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relationship however: there may be a bruit without occlusion and there may be occlusion without bruit. Sometimes a clue is derived from the eye: narrowed retinal arteries, small emboli from the heart blocking retinal arteries, or measurements of the pressure necessary to stop arterial blood flow (via the ophthalmodynamometer) may be used to deduce vascular disease inside the head.

Similar deductions may come from more esoteric devices, which include measurements of radioactivity from materials injected directly into the carotid arteries (counting devices are placed outside the head while the flow is monitored and visualized as a rise and fall of radioactivity as the blood passes under the counters), and even an overall measure of cerebral blood flow and its derangements may be had from older techniques (measuring blood gases going to and coming from the brain after inhalation of nitrous oxide or radioactive xenon). Radioactive materials also may be used in a more conventional manner, that is by brain scan using mercury, radioactive iodinated serum albumen (RISA) or technetium 99m. Such scans may pick up vascular disorders which have been sufficient to change the metabolism of the brain (temporary ischemia), and sometimes they may mimic tumor or subdural hematoma. At one time it was believed that the differentiation could be made by the persistence of a positive scan in tumors and disappearance of a positive scan within six weeks after infarct, but this is now known to be not reliable.

Echoencephalography may be used to detect shifts of structures within the head and may be valuable in differentiating a mass lesion (such as an intracerebral hemorrhage or massive infarct) from a small ischemic area in a vital place producing a neurological syndrome similar to the larger lesion. Its chief value at present appears to be detecting large clots such as subdural hematomas (which may occur with cerebral vascular disease, or, more important, may mimic the latter when there is no history available at the time of examination of an unconscious patient.)

The most information, aside from the clinical neurological examination, concerning

cerebral vascular disease, comes from two sources, best used in succession: (1) lumbar puncture, and (2) cerebral angiography. So far as I am concerned, the best way to distinguish the causes of an acute cerebral vascular disorder ("stroke") implies the use of spinal puncture to determine if there has been gross hemorrhage. Then a decision can be made as to whether or not angiography should be done (depending in great part on the medical condition of the patient since it should not be done in a completely comatose patient with dilated pupils and difficult breathing), and whether the techniques involved should be directed against vessels in the neck or in the head or both.

The bleeding lesions of cerebral vascular disease include aneurysm (about 50 per cent of spontaneous subarachnoid bleedings), arteriovenous malformations (perhaps ten to 15 per cent), emboli (five per cent), tumors (ten per cent), and the other 20 per cent are made up of arteriosclerotic breaks plus a few rarer causes such as leukemia, encephalitis, purpura, and anticoagulants. Angiography is a procedure which is essential in the differential diagnosis of most of these lesions: obviously if it is known that the patient has a systemic bleeding disease, or if he has rheumatic heart disease and is throwing emboli to the kidneys, lungs, etc., angiography may not be necessary. But for most instances of intracranial bleeding, it is necessary, and may give enough information to make diagnosis and treatment possible. The big disappointment comes when angiography fails to disclose the source of bleeding or the presence of vascular disease inside the head; then we can rely only on past experience and guesswork for diagnosis. Thus, if the patient is 65, diabetic, hypertensive, and has

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*Since graduating from George Washington University School of Medicine in 1942, Oscar Sugar, M.D., has been certified by the American Board of Neurological Surgery. He is presently Professor of Neurological Surgery at the University of Illinois College of Medicine. He is Vice-President of the American Association of Neurological Surgeons and a member of the American Neurological Association.*



had a hemiplegic bleeding stroke, one can deduce the probability of arteriosclerotic plaque rupture.

The non-bleeding lesions of cerebral vascular disease can be diagnosed usually only by angiography, but not all of them. It is in these instances that it is worthwhile to insist on visualization of the vessels of the neck as well as those of the head. Then if partial or total or multiple occlusive disease is found, a reasonable guess can be made as to the cause of the cerebral vascular episode, whether it be hemiplegia, a transient cerebral ischemic episode, or dizziness, etc. Actually, the successful angiogram only

points to the fact that there is occlusive disease, not to the absolute diagnosis. It does not say whether it is arteriosclerosis or arteritis, or whatever. Unfortunately, only operation or autopsy can make the positive diagnosis. The best we can hope for at present is to make a diagnosis that cerebrovascular disease exists, that it is present in a certain location (or locations), that it has produced bleeding, infarction, or gradual nerve cell depletion, and that (depending on these factors) definitive or symptomatic treatment, medical or surgical, is indicated. ☐

P.O. Box 6998, Chicago, Illinois 60680

## 190,000 OKLAHOMA FAMILIES POVERTY RIDDEN

Some rather startling statistics were revealed in a recent publication by the Department of Public Welfare. The publication, designed to promote the use of Medicaid in Oklahoma, stated that almost 190,000 families in Oklahoma have an annual income of \$3,000 or less, and that 43,000 of these exist on under \$1,000 per year.

It went on to state, "In 18 counties in eastern and southeastern Oklahoma, a disconcerting 18 per cent of the counties' total population receives welfare assistance. These same counties are listed among the poorest in the U.S."

Another paragraph stated, "It is well documented that the poor are susceptible to

high rates of disease and illness. Men and women with incomes of less than \$2,000 suffer heart disease at a rate four times as great as does the rest of the population; mental illness, retardation and nervous disorders occur six times as often; serious eye diseases are ten times more common. Of the poor who are employed, one-third have chronic illnesses that limit their ability to work. In comparison, only nine per cent of the rest of the population have a chronic ailment."

The brochure goes on from this point to explain briefly who is eligible to receive Medicaid assistance. ☐



# A Hard Look at Medical Education in the Neurosensory and Visual Fields

RICHARD C. TROUTMAN, M.D., F.A.C.S.

*Has medical education bypassed the "switchboard" and its input output mechanisms? How can current teaching practices be altered to increase student exposure to the neurovisual sciences? The author attempts to answer these questions in the following article.*

UNTIL RECENT YEARS, in most medical institutions, ophthalmology has functioned as a stepchild of general surgery. This position has been earned, and in some cases endured, primarily because of our need for communal operating room space. It cannot be denied, however, that there is little evident or practical reason for this clinical departmental relationship. In the structure of the surgical undergraduate teaching program there would seem to be even less reason. On a rational basis, the teaching of ophthalmology to the medical student should have to do primarily with the nervous system, with visual physiology, and with the relationship of the eye to various medical and essentially non-surgical diseases. Because of this artificially based relationship to general surgery and

the resultant dependence of ophthalmology on surgical teaching time, we find ourselves unable to participate effectively in the systematic instruction of the undergraduate in these most important phases of his education. Attempts to expand our teaching into the time allotted other departments more closely related medically to ophthalmology, have always met with considerable resistance, and rightfully so, because of their own needs which must be met within their limited teaching time. Consequently, the teaching of ophthalmology in relation to general neurology and medicine tends to be so restricted as to have little meaning to, or impact on, the medical student during his general course of study. Ophthalmology, perforce, has thus become primarily a graduate specialty, one to which the medical student has been introduced briefly, but of which he has no real understanding at the completion of his medical curriculum. Since 1955, the Federal Government has recognized the tremendous health and economic toll exacted on the public by neurological and blinding diseases. In an effort to aid our specialty, together with that stepchild of medicine, neurology, in developing their research and teaching programs, it has established the Institute for Neurological Diseases and Blindness. Its programs in ophthalmology alone, in excess of \$12,000,000 a year, have considerably strengthened the postgraduate research and training units of a number of ophthalmology

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divisions and departments throughout the country. In many medical schools, ophthalmology sections or divisions have achieved a status which can no longer be ignored. Some of these medical schools have chosen the only route accessible to them within their present administrative and departmental structure and have advanced these surgery divisions to departmental status. Others are still struggling with the problem of how to increase the status of this and other emergent subspecialties without totally disrupting their administrative structure. Now, of 85 medical schools, 57 have departments of ophthalmology, 15 have divisions of ophthalmology, and 13 still fail to list ophthalmology as part of their undergraduate curriculum. Though departmental status has given ophthalmology a greater voice in the affairs of the medical school through membership on the executive faculty council, it has served also to delineate further our differences, and to emphasize our anomalous position; only in rare instances has it significantly increased the strength of ophthalmology in teaching the neurovisual sciences.

Even more recently, the Bureau of State Services has implemented a neurological diseases and blindness section which is providing funds to ophthalmology, neurology, neurosurgery, and otology for public health programs for the prevention and treatment of neurological and blinding diseases. These funds, now in excess of \$4,000,000 per year, have served to strengthen still further the graduate position of ophthalmology, again without an accompanying increase in stature or responsibility in the undergraduate teaching of the neurovisual sciences. Far from solving the situation, enlightened public interest has compounded it. The medical school feels relieved of its responsibility for increasing support to both graduate and casually existing undergraduate neurovisual programs, and thus inadvertently further de-emphasizes them. This tends to confuse the grateful recipient of the Federal support and he may tend to shift his primary focus of responsibility and loyalty from the medical school to his temporary benefactor. It would appear that it is time for the medical school to reassume its rightful leadership and to provide a greater measure of recog-

nition and support to the undergraduate teaching of the neurovisual sciences.

When one carefully examines the structure of the modern medical school, he finds that it is really not very modern at all, being still organized on the general lines proposed in 1910 by Flexner. In fact, the medical school is really two schools: one, a graduate school organized for the teaching of basic sciences in the undergraduate medical curriculum; the other, an undergraduate school for teaching clinical sciences. These two areas—their faculties often only casually related—are separated not only by differences in goals, but also by considerable economic differences, which serve only to emphasize the separation. For example, for a student to obtain a complete background in the neurovisual sciences, he must relate in the basic sciences to anatomy, physiology, pharmacology, pathology, and microbiology. Later, he must integrate this knowledge separately in the clinical departments to medicine, pediatrics, neurology, neurosurgery, radiology, ophthalmology, otology, and rehabilitation medicine. Since his training in neurovisual sciences occupies only a small portion of the curriculum time allotted to each of these departments his education is fragmented, considerably overlapping in some areas and often incomplete or absent in others. This is true also in the teaching of other body systems, such as the cardiovascular system, the musculoskeletal system, the genitourinary system, the respiratory system, the gastrointestinal system, and the reproductive system. Though I do not propose to discuss these latter systems in detail, it certainly must be recognized at the start that each of these areas is now taught in a kaleidoscopic, rather than in a linear method. It is by reason of the innate ability of man to integrate for useful purpose the various bits of knowledge which he accumulates, rather than the efficacy of the method by which these subjects are presented to him, that the successful medical student eventually achieves a level of knowledge that enables us to award him a degree certifying his proficiency in the medical sciences.

Certainly, the Flexner system should be given credit for developing the present high



level of medical education. The system of medical education now practiced in this country has provided us with a steadily increasing quality and quantity of medical care so that the United States may be said to be, medically speaking, one of the best cared for countries in the world. All of us here today have been educated by this system. A certain pride in our profession and its achievements under this system could stimulate us to perpetuate programs which may have outgrown their usefulness. If we again examine the current concept of a medical school, we find an artificially constructed departmental structure working toward a curriculum based on the concept of an organ-oriented vertical teaching program. The individual department becomes, within, a house divided against itself. Without, its relationship to other departments is confused by their overlapping interests and rigid separation. Today a departmental chairman is more often than not organ-oriented or system-oriented, and another area within his department that does not represent his particular interest may often inadvertently receive less attention than it deserves. For example, general surgery is one of the most rapidly expanding departments in the medical school. The general surgeon as we identify him, however, in the old sense, is rapidly becoming extinct. General surgery has exploded into a number of organ-based divisions, among the first of which was ophthalmology and otolaryngology, later followed by orthopedics, urology, neurosurgery and, more recently, plastic and reconstructive surgery, thoracic, pediatric, and cardiovascular surgery. Each of these areas is related more to general medical, pediatric, and obstetric and gynecological services than to the fountainhead of general surgery. Their interests are often so diverse, as is the case with ophthalmology, that they cease to have any medically meaningful relationship, except in the use of communal operating space and hospital beds and in the necessity for cross-consultation. What remains essentially is an artificially based power structure that is perpetuated within the medical school, at least, for historical rather than for practical

reasons. Medical school administration and the executive faculty, composed of the department heads, find themselves unwillingly engaged in a battle for curriculum time to maintain the individual power structure and are blocked in their attempt to establish meaningful curriculum content. When a block of curriculum time has been finally and somewhat arbitrarily assigned to a department, the chairman often finds it impossible to combine his diverse resources into an effective and coordinated teaching program which is meaningful to the medical student. This has led in a number of medical schools to lengthy so-called elective periods where the medical school has seemingly abdicated its responsibility for the organized training of the medical student and has come to hope somewhat wishfully that the student will be able to train himself in the areas in which he and they find themselves deficient by reason of the inefficient and disorganized curriculum content.

Finally, the medical school suddenly has found itself propelled into the age of specialization, with a medical school curriculum designed for production of the generalist. The medical student who wishes to specialize on completion of his medical education, must painfully retrace his steps in the area of his desired specialization. He must fill in the gaps in his basic specialty knowledge by additional courses of instruction which further lengthen his postgraduate specialty training. If he were educated in an organ-based, vertically-structured teaching program, he could not only choose more knowledgeably his eventual area of specialization, but also he would be more adequately prepared to enter

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it on completion of his medical school program. The internship, as we know it today, could be easily eliminated for physicians wishing to specialize in the various medical and surgical areas, and a new and more advanced type of internship could be developed, one better suited to the needs of persons wishing to pursue a general medical career.

I should like now to discuss my thoughts concerning the structure and function of a department for neurovisual sciences. Such a department would utilize the resources now available in almost every medical school. It would combine the resources already existing in almost every department of the basic and clinical sciences having to do with the neurovisual sciences. From the basic sciences, we would borrow the neuroanatomist, the neurophysiologist, the neuropharmacologist, the neuropathologist, and the microbiologist interested in neurological and blinding diseases. We would combine the Divisions of Neurology, Neurosurgery, Otol-ogy, Speech and Hearing, and Ophthalmol-ogy, together with a neuroradiologist and individuals from the Departments of Psy- chiatry and Rehabilitation Medicine inter-ested in the rehabilitation and reeducation of neurologically disturbed or blind individ-uals. These special neurovisual science areas should be housed in common physical space and there should be a single administrative head. We feel, however, that this position of administrative head should be occupied by a periodically rotated chairman, rather than having one individual continuously in charge of the department for an indefinite period, or until retirement. We believe this administrative head should be rotated among the division chiefs of neurology, neurosur- gery, ophthalmology, otology, and speech and hearing, and possibly heads of the basic sci-ences neurovisual divisions. This adminis- trative structure should enable us to design more effectively the students' basic science instruction toward his clinical experience and to unify research effort with that of the basic scientists into more meaningful and related areas of research. We would hope to include within the department a number of Ph.D. physician specialists who would pro- vide broader based contacts between the pure clinicians and the pure basic scientists.

By combining currently assigned research areas and equipment, we should be able to carry forward our research programs more efficiently and economically and, in addition, effectively combine the existing technical and supporting staff to eliminate duplication of functions and probably increase their unutili- zation by reassignment within the depart- ment. Inpatient and outpatient space, cur- rently assigned to the clinical areas, could also be combined for more effective use of this space and its diagnostic equipment and facilities. Finally, the teaching time present- ly assigned within each department could be combined so that during each year of his medical curriculum, the student would be ex- posed to a block of time devoted exclusively to the neurovisual sciences. Thus, he would progress to an integrated and systematic un- derstanding of the subject matter. For ex- ample, in the first year of medical school, he would have neuroanatomy, neurophysiology and neuropathology; in the second year, neu- romicrobiology, neuropharmacology, and neu- roradiology. These basic science areas would be taught by basic scientists together with clinician specialists, and the student would have an early exposure to patients. In the third year, he would begin his exposure to the specialized clinical neurovisual areas. This could be done individually or collective- ly, since the clinical divisions would be com- bined in a single inpatient and outpatient area, and individual and combined specialty conferences could be scheduled so he would have continuous exposure to all the clinical neurovisual sciences. Thus by the time the student reaches his fourth year, he should be able to choose more intelligently elective programs either in one of the neurovisual science specialties or in a specialty area in one of the other vertically-organized organ- system departments. As an alternative, he could be assigned in rotation to cover each area in turn at the University or an affiliated hospital, functioning somewhat as an intern does today. At the completion of his medical school education, he should be able to decide if he wishes to continue his medical career as a basic scientist, a specialist, or a general- ist and to continue in any one field with suf- ficient basic and clinical knowledge to propel him in his chosen field into a position equiv-



alent to that of the second year resident in today's postgraduate structure.

The basic curriculum of a Neurovisual Science Department would be based on the teaching of the automaton system basic to computer theory. We would teach neurovisual sciences, that is, the nervous system, as an input-integration-output system. Thus, ophthalmology and otolaryngology, speech and hearing, and related basic sciences would be involved primarily with input and output mechanisms, whereas neurology and neurosurgery, and their supporting basic sciences, would be concerned primarily with integration mechanisms. This method of teaching would lend itself to the training of the student also in the understanding and use of computers, which he could then apply to all aspects of his medical research and practice, regardless of his field. Many medical schools already have installed computer centers but computer sciences now are little understood by medical students. It will be essential in the future, that every student leave the medical school with an understanding of computers and their use. An understanding of the computer and its intricacies is but a step from understanding the nervous system, and vice versa.

You may wonder why an ophthalmologist, in particular, has developed such an interest in the teaching structure of the medical school. I should say it is primarily because I am a physician. Secondly, as a teacher, I

am interested in seeing continuing progress in the education of medical students toward the eventual fulfillment of their role in the practice of medicine. Because of the demands made on us as clinicians and as teachers, I feel it is incumbent on all of us who bear the responsibility to produce a physician specialist to carry out this task as efficiently as possible. We can do this only by increasing the effectiveness of our medical school teaching. A conversion of our curriculum to the vertically structured department is a means to this end.

Finally, I feel that though the neurovisual system is one of the more important, if not the most important system of the human body, it has received relatively little attention in the medical school curriculum. In this computer based society, it seems that we in the medical schools have chosen to ignore the human input-integration-output system. We must strive to learn more about the human nervous system. I feel that, unless the neurovisual sciences are given a more prominent place in medical education, the physician specialist, the basic scientist, and the generalist will not have sufficient interest to delve into its mysteries and give us solutions to the problems confronting us.

The implementation of such a program would require broad changes in the current medical curriculum, but eventually would permit vertically-oriented teaching programs to be instituted not only in neurovisual sciences but also in all major body systems. □  
115 East 64th Street, New York, New York

## RMP DIRECTOR NAMED

Doctor Dale Groom has been named to the position of Director of the Oklahoma Regional Medical Program. A native of Oklahoma, he currently heads the Continuing Education Program at the Medical College of South Carolina.

Doctor Groom is nationally known for his work in both cardiology and continuing edu-

cation. He is a member of the AMA Council on Postgraduate Program and leader in the American College of Physicians. He has been president of the Association of Medical Television Broadcasters and serves on the Advisory Board of the Mayo Foundation. Doctor Groom will assume his new responsibility in the latter part of the year. □



# Physical Therapy and Postural Drainage in Cystic Fibrosis

M. FLUX, M.D.

*Although our knowledge about cystic fibrosis has increased considerably during the past several years, the application of physical therapy and postural drainage, as part of the treatment, is often minimized.*

PHYSICAL CARE of the respiratory tract is probably one of the most important methods of treatment and prophylaxis for patients with cystic fibrosis. Since the first recognition of the concept of cystic fibrosis in 1936 and 1938 by Franconi and Anderson, significant advances in treatment have been made. We must recognize, however, that the pulmonary involvement and its complications still dominate the clinical picture and that bronchial obstruction is the primary problem in these patients (figure 1).

Physical therapy and postural drainage are aimed at the excessive and abnormal bronchial mucus in this disease.<sup>1, 2</sup>

## PATHO-PHYSIOLOGY

In terms of flow-resistance, the degree of abnormality of the mucus has been estimated as a sixfold increase in viscosity.

From the Department of Pediatrics and the Cystic Fibrosis Center, Children's Memorial Hospital, University of Oklahoma Medical Center, Oklahoma City, Oklahoma. Presented in part at Pediatric Postgraduate Seminar "Respiratory Disorders in Infancy and Childhood," April 10th, 11th, 12th, 1967, University of Oklahoma Medical Center, Oklahoma City, Oklahoma.

The abnormal flow-resistance then is a massive overload for the propulsive power of the ciliary action, as well as the cough reflex, in these patients, and physical therapy is becoming more and more an established physical aid to drain the various divisions of the bronchial tree. The technique is not original and the methods have been widely practiced in England and some of the West-European countries in their chest clinics for quite some time.<sup>3, 4</sup>

## PHYSICAL THERAPY

The objectives of physical therapy then are to maintain or obtain better and improved lung function through breathing exercises and postural drainage.<sup>5, 6</sup>

Adults with pulmonary problems can be taught to clear their bronchial secretions quite satisfactorily by following a systematic

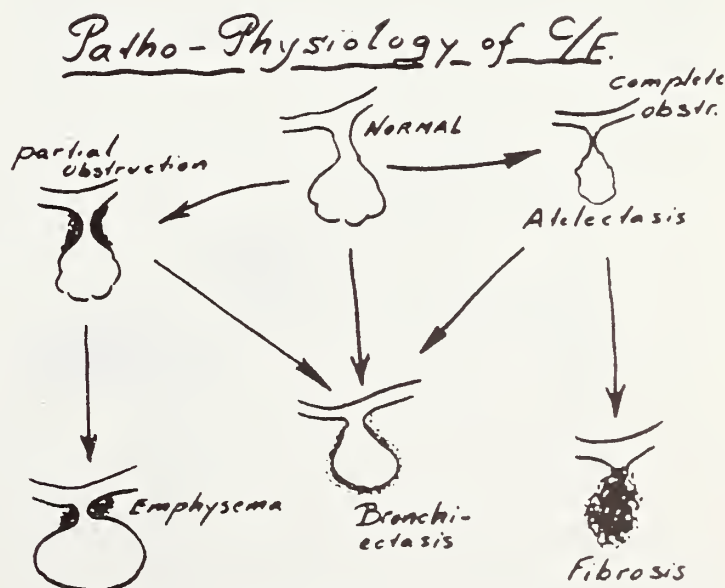


Figure 1. Patho-Physiology of Cystic Fibrosis.



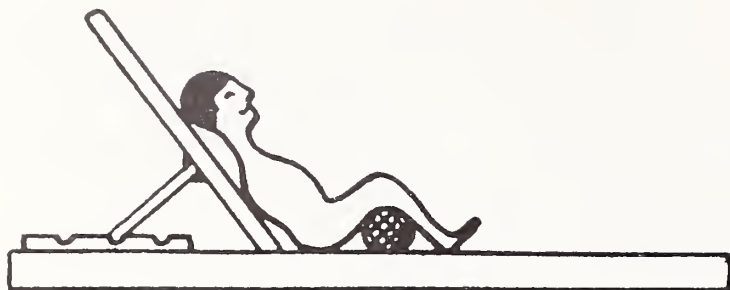


Figure 2. Relaxed Half-Sitting Position for Diaphragmatic Breathing.

routine of breathing exercises. Children, however, especially the very young, are usually unable to cooperate fully and need active assistance.<sup>7</sup> Breathing exercises, regardless of age, are indicated for the majority of patients with cystic fibrosis including those with only minimal pulmonary involvement. In the majority of chronic chest conditions, the expiratory phase becomes shortened and the residual air space increased. Increasing the duration of exhaling is therefore a primary aim.

The patient is placed in a relaxed, half-sitting position and instructed to expel the air gently and without any forceful action (figure 2). Gradually the duration for breathing-out is increased.

The shoulders should be relaxed and the abdomen is not allowed to bulge during breathing-out. The lung function can thus be improved when the patient uses correct diaphragmatic and lower, posterior costal breathing. Breathing exercises should be practiced approximately twice daily until a correct breathing pattern is established. These exercises also may improve the patient's posture. In some instances specific

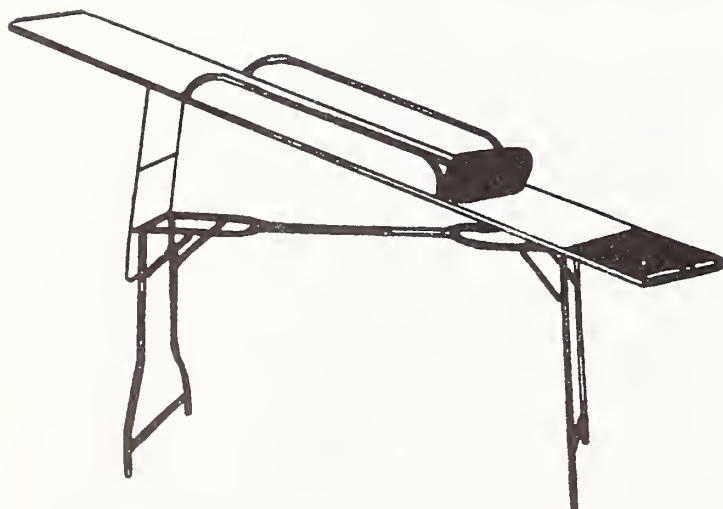


Figure 3. Postural Drainage Table.

postural correction exercises are indicated to permit better performance of breathing exercises. Children with respiratory difficulty tend to develop rounded shoulders, barrel chest, sagging abdomen, and forward position of the head.

#### POSTURAL DRAINAGE

The principles involved in postural drainage are quite simple. Fluids usually tend to run downhill. Applying this principle to a patient with pulmonary problems can be done by placing him in various appropriate positions by elevating the lower end of a table or bed.

Special drainage tables are commercially available and they look very similar to ironing boards (figure 3).

Basically three procedures then are involved in postural drainage.<sup>8,9</sup> (1) Turn or place the patient into a position so that drainage is assisted by gravity. (2) The lung segments are clapped for drainage. This is accomplished by clapping the chest wall externally with cupped hands. (3) During exhalation, the same lung segments are vibrated.

Positions for postural drainage are determined by the lobe locations as well as the directions of their bronchi.

#### UPPER LOBES

The apical segments, left and right, are done with the patient in sitting position, leaning backward or forward. Clapping is done below the clavicles in front, and above the scapulae on the back. The anterior segments are done with the patient lying flat on his back and clapping again below the col-

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UPPER LOBES

Apical  
Segments

Anterior  
Segments

Posterior  
Segments

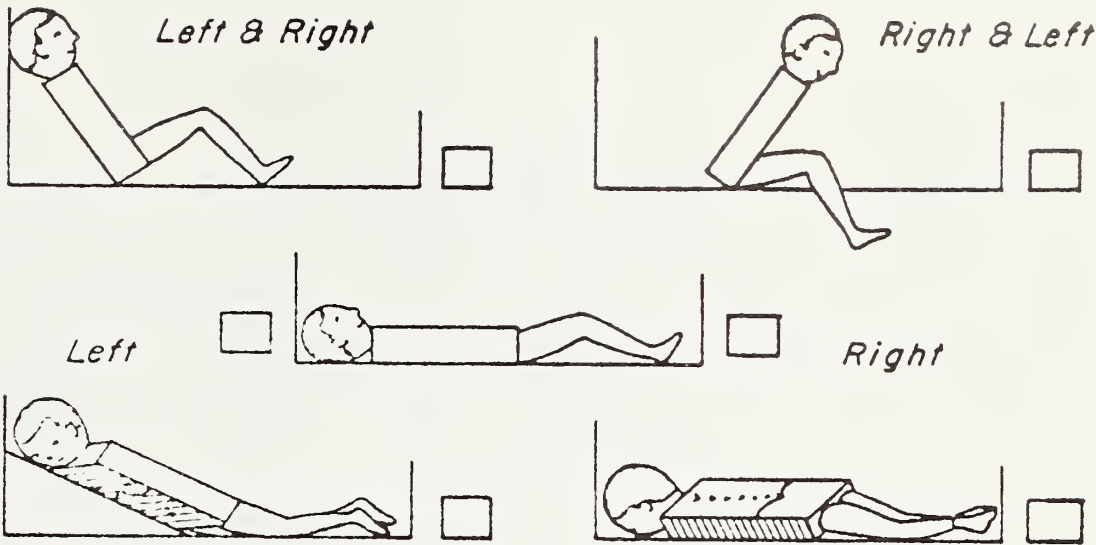


Figure 4. Postural Drainage Positions for Upper Lobes.

lar bones. The posterior segments are clapped with the patient lying on either his left or his right side with a pillow in front of and under his elevated shoulder (figure 4).

MIDDLE LOBES

For the right middle lobe the foot of the bed is elevated 10 to 12 inches, the patient lies supine with the head down and a pillow under his right shoulder. For the lingula a similar position is done only with the patient turned to the right. For both positions, clapping is done over the respective nipple areas (figure 5).

LOWER LOBES

For the basal left and right anterior segments the foot of the bed is elevated 12 to 14 inches, the patient is lying on his back and clapping is done over the lower ribs. For the right and left posterior basal segments the foot of the bed is also elevated 12 to 14 inches, the patient is lying on the left side with the knees bent and clapping is also done over the lower ribs.

MIDDLE LOBES

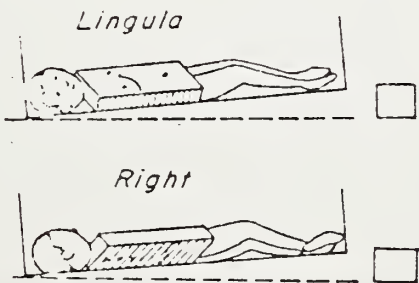


Figure 5. Postural Drainage Positions for Middle Lobes.

For the right and left lateral segments the foot of the bed also is elevated, and the patient is lying on his right or left side with two pillows under the hips. Clapping is done in both positions over the lower rib areas.

The superior or apical segments are done with the patient prone. A pillow is placed under the stomach and clapping again over the lower rib areas. For the apical segment position, the bed is not elevated (figure 6).

The various positions for drainage can be modified and especially in very young children and infants the physical therapist can handle them more effectively when she holds them on her lap when seated.

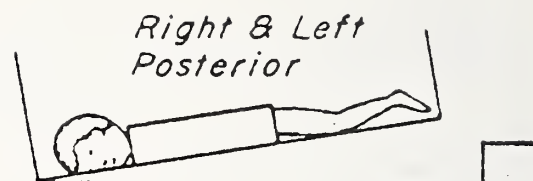
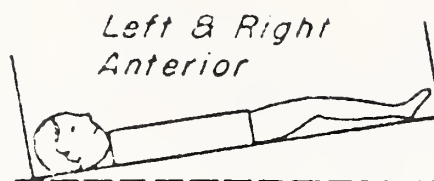
To loosen mucus, clapping with cupped hands is done over each area in the appropriate drainage position. While the child is breathing out, the therapist applies vibration by hand. This vibration is given to aid drainage of the already loosened mucus and also to stimulate a cough reflex. Mechanical vibrators can be used and are commercially available.<sup>10</sup> Their vibration is of the percussive-type and the mechanical vibrator is placed against the chest wall. Experiences have been varied, however, and many feel that these methods are inadequate. Other mechanical vibrators can be applied by hand to the chest wall. If possible, it is better to get the patient to cough and expectorate while in the specific draining position, but, in most cases children are unable to do so and prefer to sit up and cough.

Postural drainage is usually given for approximately ten or 15 minutes, depending on the child's tolerance.<sup>2, 7, 11</sup> There is a dif-

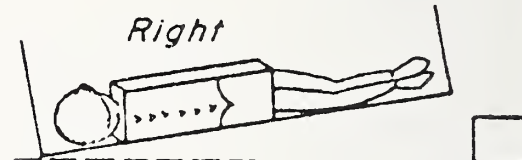
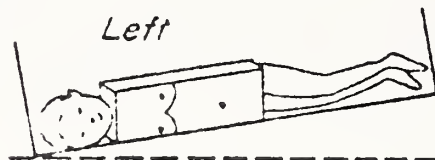


## LOWER LOBES

Basal Segments



Lateral Segments



Superior (apical) Segments



Figure 6. Postural Drainage Positions for Lower Lobes.

ference of opinion as to whether it should be employed before or after aerosol therapy. Patients with excessive amounts of sputum probably benefit most if drained both before and after.

As a routine procedure for each position the following can be done:

1. Clap, 1 minute.
2. Vibrate, 5 exhalations.  
Rest on inhalations.
3. Cough! NOTE: Allow cough—p.r.n.
4. Repeat each position.

Many of the children when first started on postural drainage, are ill, breathless and very apprehensive.<sup>1, 2</sup> For these children the first treatment probably should consist of draining the upper lobes and then the side-lying positions. As soon as possible, the patient then should be placed in the correct draining positions.

When the mucus is thick and difficult to expectorate the child may be afraid to cough. Encouragement and patience are often necessary to help overcome this fear.

No set formula or routine is applicable to all patients.<sup>1, 9, 11</sup> Individual variations must be made in selection, duration, frequency and sequence of procedures, based on observation and judgment of the physician and the therapist. As a prophylactic measure, all lobes should be drained at least twice daily. Drainage of any area should be continued as long as the cough is productive. This therapy is a daily procedure whether the cough is

productive or not. Even when mucus is not clinically detectable, it is thought that routine, daily drainage will help in keeping the lungs cleaned out. Other physical activity is also important in preventing accumulations of mucus in the lungs. Small infants should be turned frequently and older children should be encouraged not to limit their activities, even during hospitalization.

## SUMMARY

The experiences in recent years have shown that the prognosis for most children with cystic fibrosis can be greatly improved if immediate, carefully supervised, intensive treatment is instituted. Physical therapy is a very important part of this program. □

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## ABSTRACTS

### MANPOWER: THE NEED FOR NEGRO PSYCHIATRISTS

This article reviews the problem of the increased need of physicians created by our tremendous population growth and the demands of society that everyone have access to quality medical care. Between 1965 and 1975—the need for doctors will increase by 25 per cent and the percentage of psychiatrists will increase from 11 to 16 per cent.

The increased difficulty of obtaining needed Negro physicians stems from familiar unsolved racial discrimination problems resulting in lack of background training to qualify for premedical training, other career opportunities, and the trend of all physicians to spend more time in teaching and research. One interesting fact—if the students of Howard and Meharry are excluded, there are more African medical students in North America than American Negro students.

The author reviews ways to motivate and train more Negro physicians and then discusses the fields into which the Negro psychiatrist will be drawn. These will include "human relation" specialties in their communities and community health positions.

Manpower: The Need for Negro Psychiatrists. C. M. Pierce, M.D., J. of the Natl. Med Assoc., 60: 30-33, 1968. Reviewed by C. Bloedow, M.D.

### RECOGNITION AND SIGNIFICANCE OF INTRA-VENTRICULAR BLOCK DUE TO MYOCARDIAL INFARCTION (PERI-INFARCTION BLOCK)

This article resulted from a review of EKG's of 1,938 patients showing myocardial infarction between 1956 and 1967. There was an overall incidence of 39 per cent developing peri-infarction block (the original series described only six per cent). There was a slightly higher association of peri-infarction block with infarctions located other than anteriorly. In the majority of patients (69 per cent) peri-infarction block occurred acutely or within several days following infarction, was associated with higher levels of SGOT, and the mortality was higher during the first year of follow up (54 per cent vs. 23 per cent for those without peri-infarction block). The occurrence of this type of block was nearly double in patients with recurring myocardial infarction.

The authors urge the restriction of the term peri-infarction block to the occurrence of abnormal intra-ventricular conduction in association with definite EKG evidence of myocardial infarction. Modification of this original criteria has led to much confusion and thus peri-infarction block has been diagnosed in

chronic pulmonary disease and in the absence of any apparent disease of the heart or lungs.

Recognition and Significance of Intraventricular Block Due to Myocardial Infarction (Peri-Infarction Block). K. S. Shadaksharappa, J. M. Kalbfleisch, L. L. Conrad, and N. K. Sarkar, Circulation XXXVII: 20-26, 1968. Reviewed by C. Bloedow, M.D.

### RECENT PUBLICATIONS

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□



# Books As Clinical Tools

## CLINICAL REFERENCES ON MEDICAL GENETICS

J. RODMAN SEELY, M.D., Ph.D.

During the past decade, the general area of medical genetics has undergone dramatic change with rapid, dynamic growth and development. This has been most striking in the field of biochemical genetics, with rapid advances made in elucidating the mechanisms for storage of genetic information and the genetic control of protein synthesis. Also impressive has been the rapid development and advance in the detection and elucidation of the role of chromosome disorders in clinical medicine since the introduction of techniques for chromosome analysis on peripheral leukocytes just over a decade ago. Today's medical school curriculum in these areas bears little resemblance to that of only a few years ago.

In the recent past, a number of texts have appeared in this dynamic field. For the individual interested in chromosome abnormalities, one can recommend three books written primarily at the clinical level<sup>1, 2, 3</sup> and a fourth dealing with methodology.<sup>4</sup> Valentine's brief monograph entitled "The Chromosome Disorders: An Introduction for Clinicians"<sup>1</sup> lives up to its title and is a concise, readable, informative source for a

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One of a series sponsored by the Department of Continuing Education, University of Oklahoma Medical Center.

"one-evening's reading" orientation to the subject. The other sources are more comprehensive and less superficial but in each case equally as readable.

A text entitled "Lectures in Medical Genetics"<sup>5</sup> edited by Hsia contains a series of lectures constituting a course in medical genetics. It is presented in three sections: Morphological Genetics, Biochemical Genetics, and Clinical Genetics. The section on biochemical genetics is of particular merit.

For an up-to-date general survey of medical genetics, one can recommend "An Introduction to Medical Genetics" by Roberts<sup>6</sup> which is written in the erudite manner expected from English authors. For the economically minded, McKusick's paperback edition "Human Genetics"<sup>7</sup> can be recommended for a general review.

As a reference source, but not for the practitioner's bookshelf, one should make a reference card on McKusick's "Mendelian Inheritance in Man."<sup>8</sup> This text is a combination of three comprehensive, computer-assembled catalogs of genetic phenotypes, namely, Autosomal Dominant, Autosomal Recessive, and X-linked.

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## Trustees Approve Health Issues White Paper

A major White Paper on the major health issues confronting the country today was approved by the OSMA Board of Trustees at its regular meeting Sunday, July 28th. The 14-page document outlining medicine's position will be made available to all candidates for public office who request it.

In other actions the Board appointed Ben H. Nicholson, M.D., Oklahoma City pediatrician, as Editor-in-Chief of the *OSMA Journal* to fill out the unexpired term of Doctor C. B. Dawson. In addition, Robert G. Tompkins, M.D., Tulsa, was appointed to the Editorial Board.

Jess D. Green, M.D., Bartlesville, was named as alternate trustee from District I to replace Glenn W. Cosby, M.D., Miami. Doctor Cosby was elevated to the position of trustee when Doctor Hillard Denyer resigned after his election as President-Elect of the association. OSMA Bylaws provide that the Board of Trustees shall appoint a physician to serve in the capacity of alternate trustee until the next Annual Meeting of the House of Delegates, at which time a successor will be named to fill the balance of the unexpired term.

In other actions, the Board of Trustees authorized the OSMA Planning Committee to proceed with plans for the expansion of the association's headquarters building in Oklahoma City. The Constitution and Bylaws Committee was requested to study the possibility of changing the nomenclature of the "Undue Hardship" membership petition.

In presenting the White Paper to the Board, Doctor Scott Hendren, OSMA President, pointed out that the paper was the result of a request from one senatorial candidate. He stated, however, that it was his opinion that the paper should be made available to all political candidates.

The paper, entitled "Medical Progress—A Position Paper on Major Health Issues," contains organized medicine's positions on such medical-political topics as medical manpower,

cost of health care, financing health care, catastrophic insurance, legislation by regulation, and health planning. Under each category there is set out the short term and long range plans or steps necessary to meet the pressing health problems outlined.

In authorizing the OSMA Planning Committee to proceed with plans for expansion of the association's headquarters building in Oklahoma City, the Board of Trustees was carrying out the wishes expressed by the House of Delegates at its May meeting in Oklahoma City. At that time, the house authorized the association's headquarters building to be expanded at an approximate cost of \$57,000. The construction will add about 1,900 square feet to the present headquarters facility.

The headquarters was originally constructed in 1956 to accommodate six staff employees and to provide meeting facilities for association councils and committees, and the Board of Trustees. There are presently eight staff personnel, and the volume of activities is estimated to have doubled since the headquarters building was built 12 years ago. The problem of inadequate space exists in the areas of filing and records storage, workroom and mailing facilities, private office space for staff personnel, and conference rooms for a growing number of physician meetings. □

## OU Establishes New Lectureship

The Myrtle Laughlin Memorial Lectureship in Hematology has been established at the University of Oklahoma Medical Center. "Immune Mechanisms in Hematologic Disorders" will be the topic of the first lecturer, Carl V. Moore, M.D., internationally renowned hematologist. The lecture will be held at 4:00 p.m., January 9th, 1969, at the medical center. □

## Medicare Changes Hospital Visit Regulation

Medicare's latest regulation change affects the method of physician billing for inpatient hospital visits. In the past, Medicare would not pay if a physician made a single inclusive daily charge for a number of visits made during the day to a hospital inpatient. The new regulation allows this type of billing.

Medicare Part B carrier, Aetna Life and Casualty Company, will shortly advise all physicians that they now may make one daily charge for inpatient hospital visits per day. Aetna says they will now process this type of charge on a per diem rather than a per service basis.

In the past it was necessary for a physician to bill separately for each inpatient hospital visit that he made. This usually led to a great deal of paper work in cases where physicians were visiting patients several times each day.

The new directive to the carrier reads, "In some instances physicians make a single inclusive daily charge for inpatient hospital visits regardless of the number of visits made during a day. Claims involving such charges may now be processed by the carrier if it has a valid basis for making the reasonable charge determination for such an all inclusive charge. The reasonable charge determination must be based on the customary charge of the physician for a particular service and on the prevailing charge in the locality for a similar service. If it is the customary practice of physicians in the locality to charge an overall daily fee for hospital visits to patients regardless of the number of daily visits made, then the carrier would need information on the customary daily charges and prevailing daily charges for the purpose of making a reasonable charge determination." □



## Legislature Studies Laboratory Surveillance

A special committee of the Oklahoma Legislature has been appointed to re-study the licensing of medical laboratories and laboratory personnel. The study is a result of legislation introduced by the OSMA State Legislative Committee during the First Session of the Thirty-first Legislature.

Nationwide concern about the quality of laboratory reports sparked legislation in many states last year and was a catalyst to the Oklahoma attempt.

The OSMA bill, drafted with the aid of virtually every group involved in laboratory medicine, was allowed to die in committee last session when amendments changed the intent of the act.

Pressure from the Communicable Disease Center, the Council on State Governments and diluted bills to be introduced by others at the upcoming session were the incentives that led the members of the legislature to ask for a re-study of the original bill.

Primary goal of the laboratory bill is the improvement of laboratory medicine. The major points covered in the proposed legislation are: standards for both laboratories and laboratory personnel, procedure for licensing, establishment of an advisory committee and the delegation of authority for enforcement to the State Health Department.

Doctor A. B. Colyar, Health Commissioner, hosted two meetings of interested organization representatives to discuss minor revisions in the proposed act and has drafted a revised bill for the committee.

Under the revised bill, physician-owned laboratories would be exempted from licensure where less than five doctors practice together, provided they accept no referred work. The original bill exempted less than four.

The Legislative Committee will continue to study the bill and will make recommendations during the upcoming session of the legislature. □



## Alumni Association Honors New Physicians

Scott Hendren, M.D., right, OSMA president, gets acquainted with new physicians at the annual Honoring House given by the Alumni Association of the University of Oklahoma School of Medicine for the graduating class. He and James L. Dennis, M.D., left, OU vice-president for Medical Center affairs, talk with, left to right, Gary W. Harris, M.D., Dacoma, John K. Rikkers, M.D., Santa Barbara, California, and Vaud A. Burton III, M.D., Ardmore, members of the Class of '68. The event was held at the Faculty House on the eve of commencement. □

## Tulsa Medical School Study Set

A blue ribbon committee to study the feasibility of establishment of a medical school in the Tulsa area has been created by the Oklahoma Board of Higher Regents. At their regular meeting on Tuesday, July 23rd, the regents named the committee members and authorized a contract with Booz-Allen and Hamilton, a Chicago management consultant firm, for aid in the study.

Enid regent, John J. Vater, Jr., will serve as chairman of the committee. In addition, Governor Dewey Bartlett; Senate President Pro Tempore Clem McSpadden; Speaker of the House of Representatives Rex Privett; Doctor Scott Hendren, President of the OSMA; Doctor James Dennis, Vice-President of Medical Affairs, University of Oklahoma; Doctor Jed Goldberg, Chairman of the Tulsa Medical School Committee; Doctor Myra Peters, President of the Tulsa County Medical Society;

Doctor Halley Gantz, President of Phillips University; William Burkett, Woodward; Ward Merrick, Jr., Ardmore; John Rogers, Tulsa; and W. F. Parrish, Jr., Lawton, will serve on the committee.

The committee was formed at the request and authorization of the 1968 Oklahoma Legislature. Although the legislation authorization did not include funding, the regents plan to expend up to \$5,000 in federal funds on the study. It is expected that funds will also be provided by interested groups.

The committee's final report is expected to be published in time for submission to the 1969 Legislature.

In the resolution authorizing the study the legislature stated that it takes approximately fifteen years from the time the planning of a medical school is initiated until the first physician is graduated and that Oklahoma should start planning now for its second medical school. □



## Auxiliary Members Named To OSMA Committees And Councils

To maintain a close liaison between the OSMA and their counterpart, the woman's auxiliary, Scott Hendren, M.D., OSMA president, has named an auxiliary member to most of the association's committees and councils for the coming year. His appointments were based on nominations made by Mrs. Alfred T. Baker, president of the woman's auxiliary.

Listed below are the members who will serve on the respective assignments:

Mrs. Daniel R. Storts, Tulsa, Annual Meeting Committee; Mrs. George Miller, Tulsa, Constitution and Bylaws Committee; Mrs. Alfred T. Baker, Durant, Committee on Planning; Mrs. Virgil Ray Forester, Oklahoma City, Financial Aid to Education Committee; Mrs. Richard E. Witt, Muskogee, Medical School Liaison Committee; Mrs. Marvin K. Margo, Oklahoma City, Council on Professional Education; Mrs. James B. Silman, Norman, Council on Professional and Intervocational Relations; Mrs. W. J. Buvinger, Enid, Medical Legal Relations Committee; Mrs. E. Cotter Murray, Oklahoma City, Medicine and Religion Committee; Mrs. Port Johnson, Muskogee, Committee on Nursing;

Mrs. Richard A. Clay, Oklahoma City, Committee on Osteopathy; Mrs. J. F. McMurry, Oklahoma City, Committee on Pharmacy; Mrs. Charles Bodine, Oklahoma City, Council on Public Health; Mrs. E. S. Kilpatrick, Elk City, Committee on Alcoholism; Mrs. Charles Freede, Oklahoma City, Committee on Immunization; Mrs. J. Hartwell Dunn, Oklahoma City, Council on Public Policy; Mrs. Frank Flack, Tulsa, Medical Heritage Committee; Mrs. Joseph Kelso, Oklahoma City, Public Relations Committee; Mrs. J. R. Stacy, Oklahoma City, State Legislative Committee; Mrs. Scott Hendren, Oklahoma City, Council on Socio-Economic Activities; and Mrs. Harlan Thomas, Tulsa, Governmental Relations Committee. □

## AMA President to Speak at Wakita

Dwight L. Wilbur, M.D., San Francisco, president of the American Medical Association, will be the principal speaker September 14th at the dedication of the Wakita Community Health Center in Wakita.

The rural health unit, a \$500,000 clinic-hospital-nursing home, is the first facility constructed under the University of Oklahoma Medical Center's Project Responsibility aimed at improving rural health services.

Doctor Thomas C. Points, Project Responsibility coordinator, announced the dedication program will be the afternoon of Saturday, September 14th as a feature of Wakita's celebration of the 75th anniversary (September 16th) of the Cherokee Strip opening.

Chairman of arrangements at Wakita is Jim Feist, recently appointed administrator of the new facility. Residents of the Grant County area raised funds to build and equip the center, which will contain beds for seven acute cases, 20 extended care and 24 nursing home patients.

"We were particularly pleased to have Doctor Wilbur accept, not only because he represents the more than 200,000 physician members of the AMA, but because of his deep concern with the problems Project Responsibility attempts to solve—problems of the production and distribution of health workers," Doctor Points said.

Doctor Wilbur was chairman of a special committee on health manpower which AMA set up last year. It subsequently grew into a permanent council of the association and Doctor Wilbur chose to continue to serve as chairman.

An internist and gastroenterologist in practice for 36 years, Doctor Wilbur is a past-president of the American College of Physicians and the American Gastroenterological Association. He holds the AGA's Julius Friedenwald Medal for outstanding achievement in the field of medicine concerned with the stomach and intestines.

Doctor Wilbur was born in England and educated at Stanford Uni-

## Nicholson Named Editor-in-Chief



BEN H. NICHOLSON, M.D.

*The Journal* welcomes Ben H. Nicholson, M.D., Oklahoma City, back as Editor-in-Chief, a position which he held from September 1954 to June, 1962. He was named to fill the unexpired term of the late C. B. Dawson, M.D., at an OSMA Board of Trustees meeting on July 28th.

In addition to Doctor Nicholson's private practice of pediatrics, he is Clinical Professor of Pediatrics at the University of Oklahoma School of Medicine. Among his medical affiliations are the American Academy of Pediatrics and the Alpha Omega Alpha.

Robert G. Tompkins, M.D., Tulsa internist, was also elected an editor by the Trustees. Doctors Nicholson and Tompkins will join Harris D. Riley, Jr., M.D., Professor of Pediatrics at the OU Medical School, to complete the three-member Editorial Board of *The Journal*. □

versity, the University of Pennsylvania, where he got his medical degree, and the University of Minnesota, where he holds a master of science in medicine.

All Oklahoma physicians are urged to attend the dedication ceremonies. □



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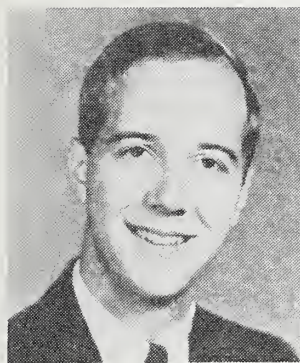
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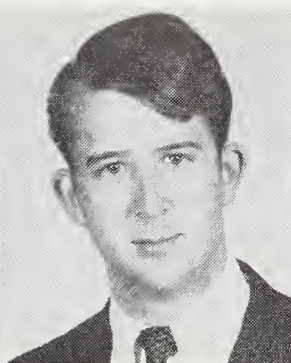




## OSMA AWARDS FIVE SCHOLARSHIPS



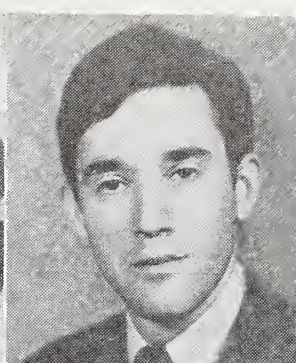
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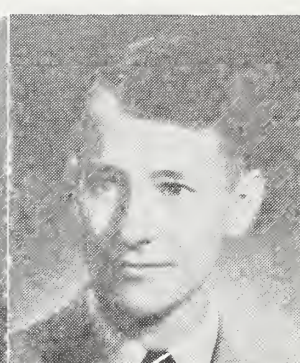
HEAD



SCHMECKPEPER



KAHN



KARASEK

Five future physicians have been named by the Oklahoma State Medical Association to receive \$500 scholarships as freshmen medical students in the University of Oklahoma School of Medicine.

The five: William W. Cook, III, Norman; Haskell Head, Stigler; David Kahn, Oklahoma City; Michael Karasek, Bartlesville; and Georgene Schmeckpeper, Champaign, Illinois, were chosen by the medical association's Financial Aid to Education Committee. Their selection was based on academic excellence in their pre-medical school work and in their medical school entrance examination.

The financial assistance program is a seven-year-old project of the medical association and is specifically aimed at attracting Oklahoma's top students to the OU Medical School. Since its inception in 1961, 35 scholarships have been given out for a total of \$17,500.

The funds for the scholarships and for medical student loans and grants-in-aid are contributed by the 2,200 doctors of medicine belonging to the state association. A portion of their annual dues goes into a special scholarship and loan fund for this purpose.

The project received the unanimous approval of the organization's House of Delegates during its 1961 annual meeting in Tulsa, and this is the seventh year the association has awarded the scholarships. The association will continue to award scholarships each year to five members of the medical school's incoming freshman class.

A portion of the funds are to be used for loans to medical students,

enabling the Oklahoma State Medical Association to make loans to about 20 additional students and to make grants-in-aid to help students meet financial emergencies. Since the beginning of the program, \$36,000 has been loaned to 81 deserving OU students. Thus far, the education committee has authorized ten loans for medical students during the 1968-69 year. According to Doctor Philip Smith, Associate Dean of Student Affairs of the Medical School, additional loan requests will still be received in September coinciding with the opening of the school year.

According to Ennis M. Gullatt, M.D., Ada, Chairman of the Oklahoma State Medical Association's Financial Aid to Education Committee, "Physicians are vitally interested in maintaining the necessary quantity and quality of professional medical care for the people of Oklahoma. As individuals and as an organization we work toward this objective in many ways . . . the financial aid to education program, we feel, will complement our other activities and we hope it will be of great benefit to the state of Oklahoma."

The five students will bring to the OU Medical School a diversity of backgrounds.

Michael E. Karasek is the son of Mr. and Mrs. Francis W. Karasek of Bartlesville. He attended Oklahoma State University where he was listed on the President's Honor Roll and the Dean's Honor Roll and received the President's Scholarship and the Wentz Scholarship.

Haskell Lee Head is a 1968 graduate of Northeastern State College

and is the son of Mr. and Mrs. H. Haskell Head of Stigler. Upon his graduation in 1964 from Stigler High school he was chosen class valedictorian.

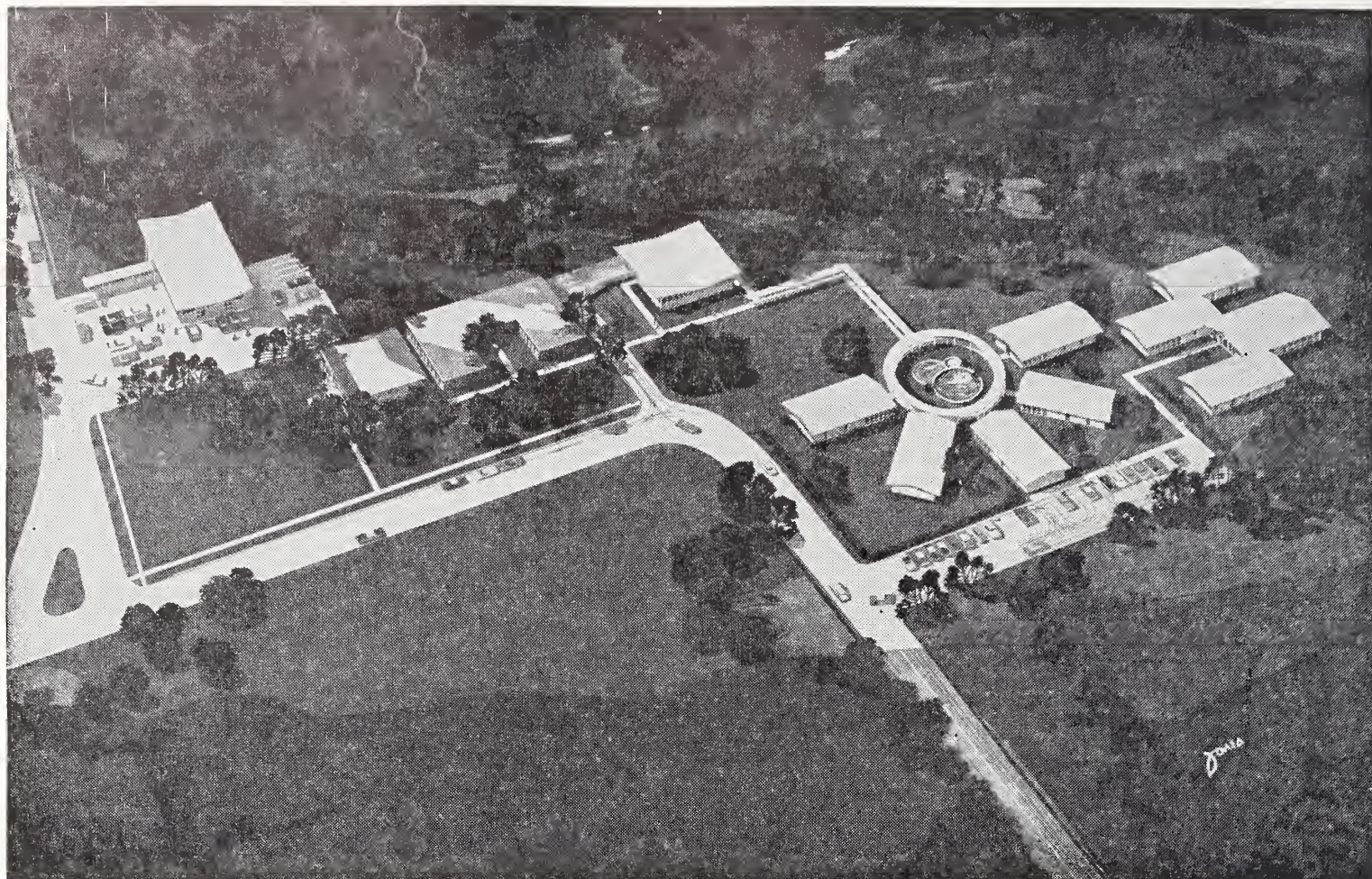
David N. Kahn is the son of Doctor and Mrs. Robert W. Kahn of Oklahoma City. He is a 1965 graduate of Northwest Classen Highschool and received his bachelor of science degree in 1968 from the University of Oklahoma. In high school he was a National Merit Scholarship finalist and in college was listed as a University Scholar and was a recipient of the Dow Chemical Scholarship.

William W. Cook, III, received his bachelor of science degree in May from the University of Oklahoma. He is the son of Mr. and Mrs. William W. Cook, Jr., of Norman. At OU he was named BMOC (Big Man On Campus) and to the Who's Who in American Colleges and Universities. He was also named Best all-around Senior Man Student.

Georgene M. Schmeckpeper is the daughter of Mr. and Mrs. John Mracek of Santa Monica, California. Mrs. Schmeckpeper is a 1951 graduate of the University of Illinois. She is married to Donald E. Schmeckpeper, an educational specialist in missile training evaluation and is the mother of five children. In the university she received numerous awards, among them the University of Illinois Scholarship Key. She graduated with honors and won a fellowship for graduate study.

The scholarships will be given to the students in two increments of \$250 each payable at the start of the first and second semesters in medical school. □





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**Workmen's  
Compensation  
Study Continues**

"How soon after work does a job related heart attack occur?"

This and many other questions related to specific injuries were asked of a special team of physicians at a subcommittee hearing on July 29th.

In keeping with a pledge of co-operation made by James P. Bell, M.D., Chairman of the OSMA Occupational Medicine Committee, Bob J. Rutledge, M.D., Camp S. Huntington, M.D. and Marvin K. Margo, M.D. met with the subcommittee studying the Workmen's Compensation Act and answered questions concerning heart injuries, head injuries and back injuries.

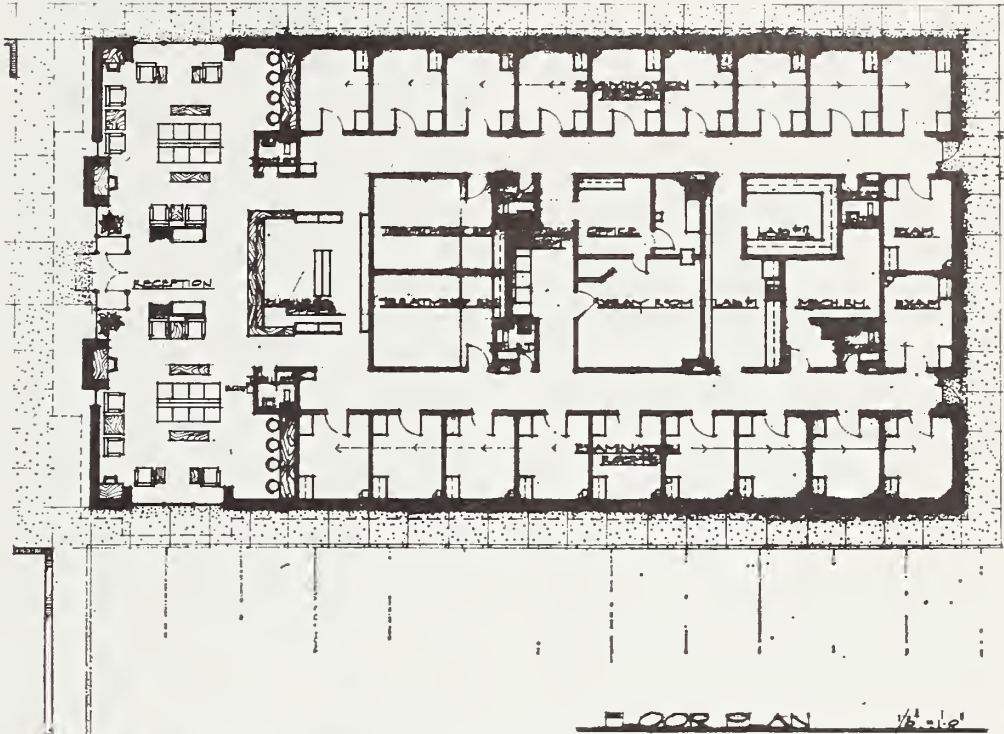
The subcommittee, attempting to find answers to the high cost of Workmen's Compensation program, had asked for specialists to help with medical problems. During the two-hour session the medical panel answered numerous questions and discussed many aspects of the compensation act. The problem of divergent testimony, high medical costs, the problems other than medical in Workmen's Compensation cases, the adversary system and many other problems were discussed.

The committee will request testimony from other doctors in the future. □

**Blue Cross-Blue Shield  
Plans Expansion**

A \$2 million expansion program which will add nine floors to the three-story home offices of Oklahoma Blue Cross-Blue Shield in Tulsa was begun in mid-July. W. R. Bethel, President of the Plans, said the expansion was based on a projection of the Plans needs over a ten-year period. The new facility will provide 106,000 square feet of working space and will bring all of the more than 300 employees under one roof. It is expected that the expansion will permit closer coordination between claims processing and the greatly augmented computer system. Completion is scheduled for fall of 1969. □

**OU Family Medicine Clinic Open**



The 20 examining rooms are the prime feature of the floor plan for the University of Oklahoma's new Family Medicine Clinic. In addition it shows two all-purpose emergency treatment rooms, an x-ray room, laboratory, offices, and reception and waiting rooms. The one-story brick and masonry building is located at N.E. 15th and Phillips in the University of Oklahoma Medical Center Area.

The new university Family Medicine Clinic at the University of Oklahoma Medical Center opened for patients June 10th, 1968. The clinic building located at N.E. 15th and Phillips is under the direction of Doctor Roger I. Lienke, director of the Family Medicine Division of the Medical School.

The OU Medical Center has become one of the nation's leaders in the move to update general practice training, and the Family Medicine Division is a key part of the program drafted by Doctor James L. Dennis, Vice-President of Medical Center Affairs, to tailor health education to meet the needs of the state.

Designed as a model clinic for the demonstration of comprehensive and continuing health care for the entire family, the \$144,793 structure has 20 examining rooms, two all-purpose emergency treatment rooms, an x-ray room, laboratory, offices, and reception and waiting areas. The one-story building is of brick and masonry construction.

Staffed by physicians on the full-time and part-time OU Medical School faculty, the clinic will be used to demonstrate general and family

practice to medical students, to train residents in the specialty of family medicine and to study the relationship of family medicine to the whole field of medicine.

The first three family medicine residents arrived this summer and each will work as a "junior partner" in the clinic, learning to manage and coordinate all medical affairs of the families coming to him.

Doctor Lienke sees "medical care for all ages, obstetrics, minor surgery and the management of trauma" as the components of family medicine practice.

Family medicine residents will train in all of these areas. They will learn to serve as the patient's "primary physician," handling the majority of his medical problems but seeking consultation from or referring patients to other specialists when necessary.

Any family is eligible for care in the University Family Medicine Clinic and the fees charged and financial arrangements are comparable to those of the average office. Except for emergencies, all care is given on an appointment basis. □



## Over 900 M.D.'s Join Malpractice Plan

Over 900 OSMA physician-members have now enrolled in the association's malpractice liability insurance program. The new program, through the Pacific Employers Indemnity Company, was secured a year and one-half ago in an effort to create stable coverage for all physicians in the association.

It is estimated that a savings in cost to members of the approved insurance program will be approximately \$50,000 a year. In addition, the PEIC program is subject to a dividend of as much as ten per cent based upon the experience of the association program. This would represent another \$30,000 savings.

No other plan available in Oklahoma offers this additional type savings. Thus far, the loss experience has been excellent and the loss ratio is considerably less than that required under the formula in the group plan. The full dividend appears to be well on its way to being earned.

Most insurance companies writing malpractice coverage in the state of Oklahoma have gone to the new national bureau rates and the new classifications system for physicians. The Pacific Employers Indemnity Company, through a contract with the OSMA, has not changed its rates or its classification system. This will mean a considerable savings in premium dollars to many Oklahoma physicians.

Under the new national bureau rates and classifications system there will be five classes instead of four. The new class one rate is the only one lower than the old rating system. Classes two through five under the new system are all considerably higher than those of the Pacific Employers Indemnity Company.

The insurance council for the OSMA explained that the new class one, even though the rates are lower, applies to very few physicians in the state of Oklahoma, and that now it is obviously an economic advantage

for all physicians to carry their malpractice coverage through the approved company.

The approval of the Pacific Employers Indemnity Company as the association's preferred malpractice insurance carrier grew out of an effort to create a stable plan for all physicians that would guarantee a savings in cost. To assure this and other concessions the OSMA entered into a contract with the preferred company. This contract assures the association that its losses will be properly and fairly reported and that its rates will be based upon a clear and complete disclosure of the insurance companies loss experience.

The contract also provides that the association might select those attorneys which it felt were best qualified to defend its members and protect their professional reputation. Additionally, the company underwriting the program will make a genuine effort to assist in the preparation of loss control material.

To fulfill this last obligation the OSMA staff with the assistance of its insurance counsel, Mr. Rod Frates, is currently in the process of preparing a malpractice prevention booklet which will be printed and distributed by the parent Insurance Company of North America to all physicians participating in the PEIC program.

The larger the number of physicians participating in the program, the more protection all the physicians have insofar as a competitive rate and a broad policy is concerned. Professional liability insurance is subject particularly to the catastrophic loss, and the only method of insuring adequately against this type of loss is to accumulate a loss reserve that can only be produced by a large number of participants in the program.

By joining an approved program, physicians receive the following benefits:

—The physician is protected from arbitrary cancellation by the insurance company.

—The physician has attorneys who are experienced and who he can trust to protect his reputation.

—The program is the least expensive

available to Oklahoma physicians.

—The program provides the broadest coverage available in any policy in Oklahoma.

—The insurance company is strong, dependable, and reliable.

—There is a dividend plan based on good loss experience, enabling the participating physician to recover part of his premium dollar.

Because of the contractual obligations between the association and the Insurance Company of North America, PEIC is in no position to pull out of the malpractice insurance market as many other insurance companies have. □

## AFL-CIO Exposes Long Range Plans For Medicine

AFL-CIO spokesman, Bertrand Seidman, told a Senate Government Operation Subcommittee that the union is asking Congress to make "bold, fundamental changes" in health and medical systems.

Seidman, Social Security Director for the powerful union, listed the following proposals:

- Steps to control fees paid to physicians and an elimination of Medicare's deductibles and co-insurance;

- The establishment of a national health insurance system under Social Security;

- An extension of Medicare to all social security beneficiaries and to additional health and medical services;

- Requiring hospitals under federal programs to be staffed by physicians subject to the director of the hospital, and re-imbursement of physicians on a per capita basis;

- The allocation of "sizable government resources for the development of comprehensive group practice prepayment plans";

- The licensing of drug manufacturers by the federal government and the generic prescription of all drugs.

In view of the political power wielded by union leaders, the recommendations are of interest as indications of future legislative issues. □



## Motor Vehicle Accidents

(Continued from page 398)

need and use of seat and shoulder belt restraints, particularly in children.

Although improvement in medical care has reduced the number of fatalities among accident victims, it is clearly apparent that to be effective the approach must be to reduce the number of accidents which occur. Generally speaking, physicians, as does the general public, have little knowledge concerning the extent and depth of the problem. Traffic-safety education of the physician is a necessity; following this proper instruction of the patient could have a marked effect toward the reduction of morbidity and mortality on our highways. It is clear that increased attention should be focused on all aspects of motor vehicle safety involving infants, children and adolescents. Among the more effective measures are driver education programs for children and adolescents.—*Harris D. Riley, Jr., M.D.* □

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## State Osteopaths Atypical

According to an analysis of Oklahoma osteopaths conducted by the Oklahoma Health Intelligence Facility, state D.O.'s are more specialized than their counterparts elsewhere. Nationwide, 87.3 per cent of osteopaths are in general practice, but in Oklahoma the figure is only 49.2 per cent. □

## Points Named to New AMA Council

Thomas C. Points, M.D., associate professor of preventive medicine at the University of Oklahoma Medical Center, has been appointed to the American Medical Association's new Council on Health Manpower and elected chairman of one of its subcommittees.

The 11-member council, concerned with means of improving health personnel production and distribution, is one of ten such AMA bodies whose function is to recommend policies and develop programs.

The new AMA president, Dwight Wilbur, M.D., of San Francisco, serves as chairman of the manpower council.

Doctor Points is coordinator of Project Responsibility, the OU Medical Center program to more adequately meet state needs for health workers, and is director of the Oklahoma Health Intelligence Facility, a demonstration health personnel data bank.

The Oklahoman last year served on an AMA health manpower committee, forerunner to the Council on Health Manpower.

He is one of five members who make up the Council's executive committee and in addition heads a subcommittee to study the possible future role of physicians' assistants in patient care. □

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## Book Reviews

**CLINICAL JUDGMENT.** Alvan R. Feinstein. Baltimore: The Williams and Wilkins Company, 1967. 414 pp. \$9.50.

The reader who looks only at the title of this book and doesn't explore its contents will be fooled. It is an unusual publication. Contemporary medicine, increasingly based on technology, has tended to discard bedside medicine as the product of the less desirable aspects of its past and not a fit subject to be considered in the same arena of the precision all too frequently accorded laboratory investigation. Feinstein has demolished such concepts and, in pointing out the error of such cleavage, has pointed out the inseparable relationship of medical practice and laboratory art. The focus is the clinician and his patient.

The basic purpose of the book is to provide methods of evaluation to test reliability and standardize performance of the clinical examination and clinical investigation. In addition to an interesting prologue which establishes the background, the book is divided into five major parts. The chapters comprise an integrated whole, yet each is designed to be read separately. All good clinicians use a distinct type of reasoning called clinical judgment to make decisions about prognosis and therapy of patients. We often refer to a clinician's judgment as being good or bad according to the wisdom with which he makes those decisions. The reasoning in this type of clinical thinking is quite different from the deductive logic employed to establish diagnosis, etiology or pathogenesis of a patient's disease. Clinical judgment depends not only on knowledge of causes, mechanisms or names for disease but on a knowledge of the patients. The background of clinical judgment is clinical experience—the things that clinicians have learned at the bedside in the care of sick people. In acquiring this experience, every clinician has to use some sort of intellectual mechanism for organizing and remembering his observa-



tions. The author cites both familiar patient problems and lofty philosophy to nail down his point. Feinstein demonstrates the clinician to be a uniquely discriminating, adaptable and portable scientific apparatus that can also be calibrated. He reveals the clinician as no less competent or wise an observer of his data than are his non-clinical colleagues. However, he emphasizes that the clinician must minimize bias in observation and make decisions on a statistical rather than an anecdotal background. He introduces the reader to approaches to this with a new taxonomy of disease, Boolean Algebra and Venn diagrams. He forcefully points out that scientific quality depends primarily on approach and method rather than on aim and apparatus—a major lesson of this book.

Feinstein elegantly points out that many of the advances credited to the "basic scientist" did not arise *de nova* from triumphs obtained in the laboratory alone. In most cases, laboratory investigation was stimulated by clinical observation of a disease problem—"In a week of practice the clinician conducts more experiments than his laboratory colleagues do in a year."

The clinician, irrespective of his discipline, will find much of interest in this book.—*Harris D. Riley, Jr., M.D.*

**THE BALKAN NEPHROPATHY**  
Ciba Foundation Symposium, by G. E. W. Wolstenholme and Julie Knight, eds. Ciba Foundation Study Group No. 30, 123 pp. Boston: Little, Brown and Company, 1967.

This monograph is a collection of the papers and discussions presented by the Study Group on The Balkan Nephropathy which convened on May 11, 1967. The Balkan (or endemic) Nephropathy is the clinical term used to indicate that many inhabitants of certain lowland villages along the Sava River and its tributaries in Yugoslavia, and along the Danube River in Rumania and Bul-

garia have a chronic, slowly progressive, ultimately fatal renal disease of unknown etiology. This reviewer wonders whether there is sufficient characterization of the disorder to justify publishing a monograph. As one of the participants at the symposium stated "the only real justification for speaking of a disease entity 'Balkan Nephropathy' is the statistical phenomenon that many people get kidney disease near the Danube."

The first one hundred pages of the monograph consist of presentations of epidemiology and urinary protein excretion patterns in this poorly defined entity. During the last twenty pages general discussions of structural and functional aspects of the associated renal tubular dysfunction as well as remarks on possible toxic etiologic agents are developed. Conspicuously absent are detailed studies of morphology and the natural history of the disorder. The need for these latter studies is underscored by the agreement of the participants that none of the material presented specifically defined the geographic disease phenomenon.

The studies and discussions of urinary protein excretion are of some interest to investigators working in this field and help to define areas for further study. The epidemiologic data are inconclusive and merely point out the need for long term prospective studies of the natural history of the disorder. This monograph will have little general appeal, but will be of casual interest to the nephrologist and other investigators interested in renal disease.—*James E. Wenzl, M.D.*

**AMBULATORY PEDIATRICS.** By M. Green, M.D., professor and chairman, Department of Pediatrics, Indiana University School of Medicine and R. J. Haggerty, M.D., professor and chairman, Department of Pediatrics, University of Rochester School of Medicine and Dentistry. 117 Contributors. First edition. Cloth, 970 pp. Philadelphia: W. B. Saunders, Company, 1968. \$22.50.

In writing a new book about an old

sub-division of child health and care, an area which is at the present time receiving renewed interest and perhaps vocal support, the authors have undertaken a Herculean task. *Ambulatory Pediatrics* is intended to present "The core material of . . . all aspects of child health care outside the inpatient hospital area . . ." ". . . The principal focus in the book is on the whole child and on his functioning in his family and community, it is also on the physician—his role and his art."

The book is divided into eight major divisions with as many as 41 sections or chapters in a single division. The initial divisions are devoted to the history, organization, and objectives of ambulatory care for children. These are primarily essay in nature and represent the strongest sections of the text. Practitioners in doubt as to the charted course of medicine in this country will certainly find the Surgeon General's attempts to "belabour the obvious" of great interest. A "third faculty" in medical schools "oriented toward the community" is suggested as a remedy for "the social policy of . . . organized medicine (which) has been consistently many years behind (the times) and often in direct opposition to the policies of society."

The student concerned with a career decision may well find the sections on solo pediatric practice and private group practice of great interest. Overall, these sections represent an excellent review of the current structure of child health care in this country. Doctor Helen M. Wallace's section on community medical care facilities amply illustrates the impact and objectives of newer federal health legislation.

A section devoted to specific skills demanded of the "Ambulatory Pediatrician" is followed by sections on symptomatology, social problems, growth and development, and long term and episodic disorders. Although the authors have neatly avoided duplication of material in these sub-divisions, the material is necessarily fragmented by this organization. The physician interested in a



child with juvenile rheumatoid arthritis, for example, may find himself shifting from the section on orthopedic skills to that on limb pain or on gait disturbances and limp, or to the sections on juvenile rheumatoid arthritis, orthopedic disorders, or indications for bedrest.

Comprehensive indexing might compensate for these organizational difficulties but this does not prove to be the case. While one can readily find the Office of Economic Opportunity and the Berlin Children's Clinic and Polyclinic, colic, menstruation, phimosis, and pityriasis rosea, to mention but a few, are absent. One must second guess to "Mammalian" bites to find our friend the dog, and after finding paralysis under paresis one is directed back to the non-existent paralysis.

The authors displaced this reviewer's chauvinistic shoulder chip with an extensive section on "The Porto Rican family and the American Indian family" which is quoted in its entirety: "These represent other cultural groups with their own child rearing practices." With prefatory emphasis on the "maintenance of health" it seems contradictory to devote two paragraphs to sex education and nine (9) pages to sexual assault. This reviewer is particularly disappointed by the perpetuation of the World Health Organization recommendations for rabies prophylaxis as opposed to the more realistic, albeit somewhat belated-appearing recommendations of the American Academy of Pediatrics Committee on Infectious Diseases.

The foregoing is not meant to preclude this book's merit to those administrators, physicians, or nurses, who, like this reviewer, are principally interested in Ambulatory Pediatrics. The book will not, however, find itself well used on the shelf of the practicing pediatrician or the academic "sub-specialist." Its primary value lies in discussions of the organization and structure of outpatient services—past, present, and future.—A. W. Pierce, Jr., M.D.

**A HISTORY OF MEDICINE IN SOUTH CAROLINA 1825-1900.** By Joseph Ioor Waring, M.D., clinical professor of pediatrics, The Medical College of South Carolina, Charleston, South Carolina. First edition. Cloth, 366 pp. with 66 illustrations. South Carolina Medical Association. 1967. \$7.70.

This is the second volume of the story of South Carolina medicine and deals with the period 1825 to 1900. Doctor Joseph I. Waring is a native Charlestonian and has been a prominent practicing pediatrician in South Carolina. He is widely known as the editor of the *Journal of the South Carolina Medical Association*.

This volume presents a vivid account of 19th-century medicine in South Carolina. It is divided roughly into three periods—before, during and after the War of the Confederacy. It is carefully researched, written in an interesting manner and well illustrated. Civil War medicine received particular attention. A long biographical section and abundant references add to this scholarly achievement. This is a valuable addition for the medical historian.—Harris D. Riley, Jr., M.D.

**SURGICAL DISEASES OF THE CHEST.** Edited by Brian Blades, M.D., Lewis Saltz Professor of Surgery and Chairman, Department of Surgery, The George Washington University School of Medicine, Washington, D.C. Second edition, cloth, 687 pp. with 295 illustrations. St. Louis: C. V. Mosby Company, 1966. \$25.00.

The second edition of this volume was published five years after the first edition and documents most of the important changes which have occurred in the management of patients with thoracic and cardiovascular diseases. In this rapidly changing field, however, the textbook is dated as soon as it is published. To compensate for this the editor has wisely selected contributing authors who are pioneers in their fields and particularly well suited to indicate the directions of surgical advances.

The book is intended to be used by students and medical practitioners as well as surgeons with emphasis

on patient selection and prognosis rather than detailed surgical techniques. It is well organized with type that is large and numerous appropriate illustrations. At the end of each chapter, there are many suggested references categorized by major subject headings and including both classical articles on the topic and current publications as of 1965.

The first two chapters dealing with basic and applied physiology are comprehensive and well written with good anatomical reviews. Some of the hemodynamic terminology is inaccurate, however, such as applying the term "stasis wave" to the atrial V-wave. In succeeding chapters, thoracic trauma, chest wall, diaphragmatic, mediastinal, and esophageal problems are well reviewed. With considerable emphasis on cardiovascular diseases, however, the review of inflammatory diseases of the pleura and lung has been minimized with only brief, superficial sketches of chronic inflammatory diseases. Even the review of coin lesions is limited to three sentences with no statistical information.

The section on cardiovascular diseases has been expanded with the addition of a chapter on surgery for coronary artery disease by Doctor Donald Effler. With excellent illustrations the authors of the six chapters dealing with cardiovascular surgical problems review the history and current management with special emphasis on technical aspects of the surgical procedures. Some individual authors, however, place great emphasis on their own techniques and prostheses occasionally failing to review other alternative methods as noted particularly in the chapter on acquired heart disease.

This volume provides a comprehensive review of surgical diseases of the chest with particular emphasis on cardiovascular surgery somewhat at the expense of chronic inflammatory diseases of the lung. It should be of value to the student and house officer concerned with the physiology, history, and applications of thoracic surgery as well as to the practicing physician and surgeon.—Lazar J. Greenfield, M.D.



**THE PREVENTION OF HIGHWAY INJURY.** By M. L. Selzer, M.D., associate professor of psychiatry, University of Michigan; P. W. Gikas, M.D., associate professor of pathology; and D. F. Huelke, Ph.D., associate professor of anatomy, University of Michigan, Ann Arbor, Michigan. First edition. Cloth, 293 pp., illustrated. Ann Arbor, Michigan: Highway Safety Research Institute, University of Michigan. 1967.

Motor vehicle accidents constitute one of the major health problems of modern society. During 1968 more than 100,000 persons will be killed in automobile accidents in the industrialized areas of the world and at least half of these fatalities will occur in the United States. Death rates on a population basis have shown no improvement in this country in the past 25 years, and they have been increasing since 1960. They have also been rising in many other countries. The number of injuries is approaching 2,000,000 each year and about 160,000 are permanent impairment to some degree. Considering both injuries and fatalities, one can estimate that ten per cent of the population in the United States will be killed or injured during the next 15 years. Property damage annually is estimated at 9.8 million dollars.

This book represents the proceedings of a symposium held in April, 1967, at the University of Michigan's Medical School and Highway Safety Research Institute. The book is divided into several major sections following general discussion of the problem. These include the alcoholic driver, vision and medical impairment, biomechanics, and the second collision. In addition to those by the members of the Highway Safety Research Institute at Ann Arbor who have made many contributions in our knowledge of automotive safety, there are presentations by Doctor William Haddon, Director of the National Highway Safety Bureau, Doctor Julian A. Waller of the Cali-

fornia Department of Health, Colonel John Stapp of the Armed Forces Institute of Pathology and other well known investigators in this field.

This book contains much information on influences in motor vehicle accidents relating to the host (driver), agent (automobile and equipment), and environment (physical and social) and the inter-relations between these factors. There is considerable data also on the frequency and types of injuries in motor vehicle accidents.

Although there is data about the occurrence of automotive injury and accidents during pregnancy, there is a striking paucity of information about such injuries involving infants, children and adolescents. This is regrettable since the mortality rate has risen more rapidly in these age groups than in any other.

This book can be recommended as a good reference for physicians and others interested in the problem of motor vehicle accidents and safety. —Harris D. Riley, Jr., M.D. □

## Miscellaneous Advertisements

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The

JOURNAL

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THE OKLAHOMA State Health Department advises that booster doses of oral polio vaccine are not required where the original immunization was complete regardless of age. The Red Book of the American Academy of Pediatrics (Report of the Committee on the Control of Infectious Disease) states under the paragraph on primary immunization of infants: "whether monovalent or trivalent (vaccine) is used in the primary course, a fourth dose, consisting of trivalent vaccine, should be given to infants at 15 or 18 months of age." It further states: "A single dose of trivalent vaccine is recommended on entrance to school for all children who have been previously immunized with OPV. This is designed to fill in any antibody gaps resulting from the occasional failure to achieve a vaccine taken with one or another type during the primary course."

LeRoy Carpenter, M.D., Director, Divisions of Epidemiology and Chronic Disease, about the difference states, "Basically, I'm sure it is a philosophical difference between the public health approach toward populations and a practitioner's approach who has responsibility for his individual patients."

The memory of polio is too clear in the physician's mind not to worry lest his patient is the one whose vaccine didn't take. Once vaccination is universal and the population well protected as the Public Health Service desires the risk would be minimal in the individual not protected, as it is today in the case of smallpox. □

### *Beware the Goober Pea!*

**AFLATOTOXINS** AND other mold produced toxins have been clearly associated with hepatocellular damage, cirrhosis of the liver and hepatocellular carcinoma in a wide variety of domestic and experimental animals. Such toxicity has been clearly demonstrated after chronic ingestion of these agents, the most toxic of which is aflatoxin B<sub>1</sub>. Sheep seem to be singularly resistant to this toxicity, and the role of these agents in the production of liver disease in the human being is still circumstantial.

The relatively recent discovery of the hepatotoxic properties of aflatoxin engenders suspicion on all agricultural products

susceptable to mold contamination. The slow production of this toxicity is influenced not only by the dose of the material and the duration of exposure but also by other factors including low-protein or cirrhogenic diets.

Those geographic areas high in incidence of liver carcinoma are relatively isolated and evidence implicates environmental factors as highly contributory. For example, the highest reported incidence of liver carcinoma occurs in the Bantu of Mozambique who experience the disease at a frequency of 15x their kin in Johannesburg, only a short distance away—also at about 500x the incidence in the United States.

It does not appear that racial or genetic factors are responsible for susceptibility to hepatic carcinoma though the male, particularly the Negro male, seems unusually prone to the disease. In high incidence areas carcinoma of the liver occurs commonly in children below the age of ten years, whereas in lower incidence areas the onset of the disease is delayed—indicating the quantitative cumulative effect of some environmental toxin.

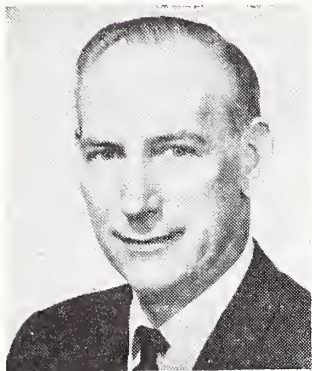
Primary hepatocellular liver cancer occurs frequently in association with liver cirrhosis though, rather than one disease producing the other, they are presumed to represent different responses to the same toxin.

The possibility of mold-producing toxins contributing to liver disease is enhanced by the fact that these diseases are more prevalent in areas in which climatic conditions and agricultural practices are conducive to development of mold contamination of food crops. Aflatoxin-producing molds grow optimally at a temperature of 30° C. and a relative humidity of 75 per cent and are considerably enhanced by crop injury due to vermin. Indeed, recently developed sensitive methods for assaying aflatoxins confirm high concentrations in such areas.

Aflatoxins have been most extensively studied in peanuts, though occur in many

Continued on page 481





Whether the connotation is valid or not, too many of us for too long have held to the image of a woman's organization in association with "little bitty sandwiches — chatter — and small talk."

If there remains one among us who holds such an image related to the Auxiliary of the Oklahoma State Medical Association (WA/OSMA), then — clear your minds and think again, that's not the way it is!

WA/OSMA is dynamic — purposeful and imaginative. The activities of this part of our medical team is producing immeasurable impact for the good of medicine and citizenship throughout the state and nation for the benefit of medicine and citizenship

In the area of community service and community relations, let us concede (with pride) that WA/OSMA is our "first team." With the support and encouragement that they deserve, their horizons are unlimited.

Let us consider a few quotes from Mrs. Frances Baker, that gracious lady and tremendous person who is currently president of WA/OSMA.

"The physician's wife should endeavor at all times to uphold the dignity of the medical profession and accept its self-imposed discipline, even in casual and social situations." (I would also charge her husband to always do the same.)

Among the many objectives of the auxiliary the "assisting of the association in programs for the advancement of medicine and public health" and "to cultivate friendly relations and promote mutual understanding among physicians' families" are large orders, the accomplishment of which will immeasurably benefit us all.

"Auxiliary responsibility in community health problems and accent on youth programs illustrate that doctors' wives, acting responsibly can indeed influence the course of community progress."

These quotes do not sound much like the products of "hen parties," do they?

If! Oklahoma medicine had the full and dedicated participation of each of the more than 2,000 physicians plus the additional 2,000 wives who are potential auxiliary members and the family interest of all — our effectiveness would increase a hundred fold.

Let us think on this — then take personal inventory — the affairs of medicine and citizenship needs the whole team.

Sincerely yours,

*Scott Henderson, M.D.*



## Clostridial Septicemia

CLARKE STOUT, M.D.

*The case of a patient with carcinoma of the lung and sudden death from clostridial septicemia is described. With the advent of more effective chemotherapy for malignant disease, the incidence of this fulminating fatal complication may well increase.*

### INTRODUCTION

THE OCCURRENCE of Clostridial infection associated with septic abortion<sup>1-3</sup> or necrotic intestinal or biliary conditions<sup>4-12</sup> is an uncommon although not a rare event. Recently Clostridial septicemia has been reported in a number of patients with disseminated malignant disease, usually involving the hematopoietic system, and frequently during therapy with cytotoxic agents or cortisone.<sup>12-15</sup> In most of these instances the abruptness of onset and fulminating nature of the septicemia have been characteristic. The prognosis is quite poor although it could be improved with prompt recognition of the syndrome. In anticipation of increasing suc-

cess in the therapy of malignant disease, the following case of fatal Clostridial septicemia in a patient with metastatic carcinoma of the lung is reported.

### CASE REPORT

A-215-66, E.L., 64-year-old white man, date of death, October 14, 1967.

The patient was admitted to the Oklahoma City Veterans Administration Hospital October 3, 1967, with a history of progressive interscapular pain of two months duration. He also complained of an increase in the severity of his chronic productive cough and intermittent right anterior chest pain during this period. He had smoked one to two packages of cigarettes per day for most of his adult life. Chest roentgenogram revealed a mass in the right hilar region with osteolytic lesions in several ribs. At bronchoscopy the right lower lobe bronchus was found to be stenotic and a biopsy from its wall was compatible with undifferentiated carcinoma. Radiation therapy was begun October 12, 1967, with a total of 800r delivered to the right hilar region on October 12th and 13th. On the evening of October 13th he became confused and the rectal temperature rose abruptly to 103° F. By morning it was 105° F, and he was restless, irrational and complaining of severe right costovertebral angle

Supported by Grant 1-F3-HE-37,078-01, the National Heart Institute, United States Public Health Service.



tenderness. Death occurred at 10:25 a.m., approximately 14 hours after the beginning of fever.

Three blood cultures, drawn 30 minutes before death, grew a large gram positive rod. Hemolysis and gas bubbles were observed in all three culture bottles. The organism was subcultured on aerobic and anaerobic media but it grew only in the latter. It did not produce stormy fermentation in milk and was therefore classified as *Clostridium* species, "not perfringens." Further bacteriologic studies were not done.

At autopsy, three and one-half hours after death, a tumor mass four cm in diameter was found surrounding the right lower lobe bronchus near its origin. Metastatic implants were present in both lungs, the myocardium, pleural surfaces, hilar lymph nodes, liver, adrenals, kidneys, bone, pancreatic capsule and small bowel mesentery. A metastatic nodule had invaded the wall of the distal ileum resulting in a necrotic ulcerated mucosal surface two cm in diameter (figure 1). Vessels of multiple organs contained clumps of tumor cells and fibrin thrombi many of which were occlusive. Several of the larger metastatic nodules contained sizeable fresh infarctions, and microscopic clumps of malignant cells frequently showed central necrosis resulting in a pseudoglandular pattern. Microscopically the tumor was classified as an anaplastic squamous cell carcinoma.

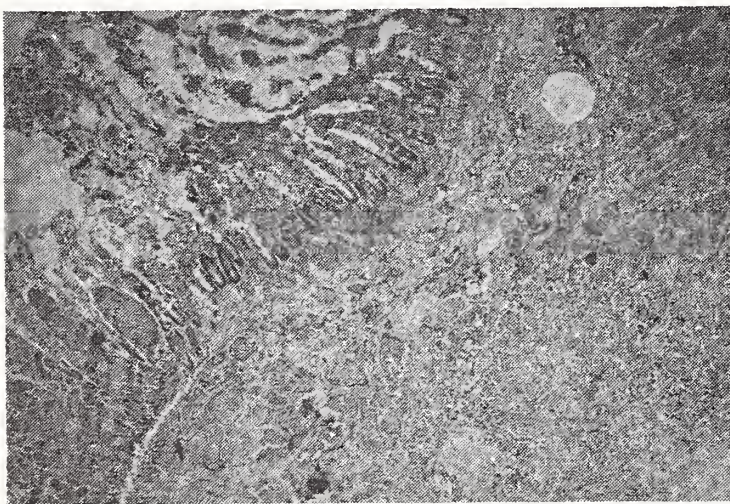


Figure 1. Terminal ileum, H & E stain, 20X. Metastatic squamous cell carcinoma has replaced the submucosal and muscular layers, extending into the mucosa in the lower left corner. Immediately beneath this area the mucosa and most of the bowel wall were necrotic.

The liver weighed 1800 grams and was studded with hundreds of metastatic implants ranging from several mm to three cm in diameter. The cut surface exuded a foul smelling, frothy material and appeared faintly porous in areas. The gallbladder and common bile duct were not remarkable. The hepatic veins and adjacent inferior vena cava contained air bubbles and showed intense intimal hemolytic staining. The urinary bladder contained pink tinged urine. Gas cysts were not visible in the remaining viscera, although the tissues were inordinately soft in relation to the short interval between death and autopsy. In the brain, which was sectioned four weeks later, multiple cysts were present, often reaching one cm in diameter.

On microscopic examination clumps of large, rather short, rod shaped bacilli were seen in all organs. In the adrenals, kidneys and liver many of these clumps were surrounded by a circular zone of necrosis. These necrotic zones were not seen in the brain, however, despite the presence of many large gas cysts and many organisms. In the liver, polymorphonuclear leukocytes filled the sinusoids adjacent to these necrotic areas and adjacent to the small gas cysts (figure 2). An inflammatory reaction was not seen in association with the bacteria or gas cysts in other organs.

#### COMMENT

The ubiquity of the Clostridial organism is well known. Bacilli potentially capable of producing gas gangrene have been cultured from the soil; from the skin,<sup>16</sup> mouth, vagina, lower intestinal and biliary tracts<sup>17-18</sup> of humans; and from the livers of dogs,<sup>19</sup> with variable but appreciable frequency. They also have been grown from surgical wounds, both clean and infected,<sup>20</sup> and occasionally from the blood, in the absence of manifestations of Clostridial disease. It is somewhat puzzling that clinical infection is

---

*Clarke Stout, M.D., a 1957 graduate of the University of Maryland School of Medicine, is now Assistant Professor of Medicine and Pathology at the University of Oklahoma School of Medicine. He is a Fellow of the American Heart Association.*



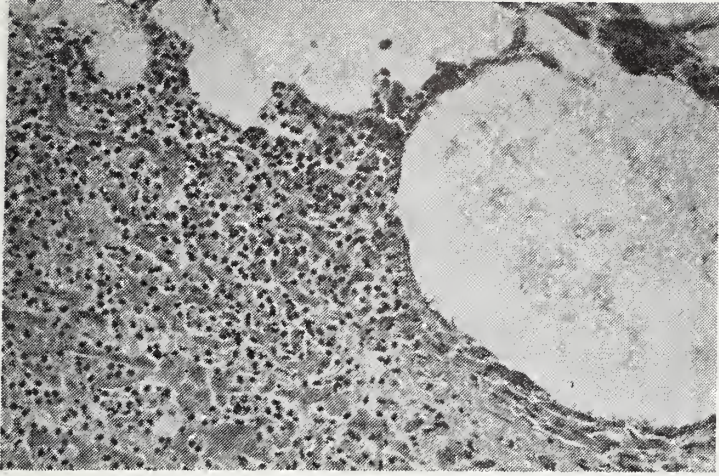


Figure 2. Liver, H & E stain, 320X. Heavy polymorphonuclear infiltration is present in the hepatic sinusoids adjacent to several gas cysts. A zone of necrosis is evident beneath the cyst on the right.

not seen more often, particularly following abdominal surgical procedures. In the typical Clostridial myositis or cellulitis which follows traumatic injury, the presence of necrotic tissue, usually deep in the anaerobic portion of the wound, is thought to be a prerequisite for rapid multiplication of the organism and toxin formation. These factors are thought to apply in Clostridial septicemia from more obscure causes, such as in the case described, and indeed this hypothesis is supported in the literature, where the common denominator in most instances has been in infected or necrotic intestinal, uterine or biliary lesion or marked debility associated with wide-spread malignancy.<sup>1-15, 21</sup> In the two cases where frank necrotic lesions were absent, debility and liver or gallbladder disease (diabetes with chronic cholecystitis; hemochromatosis with cirrhosis) were present.<sup>14, 22</sup>

With the advent of more effective and specific therapy for malignant disease, the number of patients with necrotic metastatic lesions in the intestinal or hepatic regions, and consequently the incidence of Clostridial septicemia, may well increase. Although the patient reported here was moribund at the onset of septicemia, refinements in chemotherapy should permit more effective and

possibly curative treatment, thereby making prompt recognition of this fulminant infection more important.

## SUMMARY

A patient dying with Clostridial septicemia has been reported. The organism apparently entered the body and multiplying rapidly because of numerous necrotic intestinal and hepatic metastasis, has been reported. With the advent of more effective and specific therapy for malignant disease, the incidence of this fulminant fatal complication may increase. □

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Route 1, Box 8, Oklahoma City, Oklahoma



# Irradiation Injuries of the Intestines

ROBERT L. SCHMITZ, M.D.

*Radiation injuries of the GI tract are uncommon but complex and present fascinating problems in diagnosis and treatment. They are often mistaken for residual or metastatic cancer.*

**M**OST OF US are familiar with the effects of x-radiation on the skin; they are there for all to see. But we forget that any tissue exposed to irradiation is affected in a comparable way and the consequences can be serious. In this discussion we will consider such effects on the intestines.

If the exposure is in small doses at long intervals in a total amount less than 4000r the effects are not severe. There will be inflammation and edema of the bowel wall with superficial ulceration of the mucosa, excess production of mucus, increased peristalsis, nausea and diarrhea. Soon after the exposure is discontinued these effects disappear and leave little, if any, residue.

However, if the exposure is in larger doses at shorter intervals in a total amount exceeding 4500r the effects are proportionate-

ly more pronounced. The bowel wall may become quite edematous, ulcerations of the mucosa will be deeper and may bleed significantly, peristalsis will be more active and bloody diarrhea, nausea and vomiting may be so severe as to require parenteral fluids and blood replacement. When the dosage is heavy enough in a localized area necrosis of the bowel may occur with sloughing or perforation.

After the acute reaction to such heavy doses subsides, a severe endarteritis develops followed or accompanied by atrophy and cicatrization. The villi atrophy, the glands degenerate, the lymph follicles disappear and even smooth muscle which is extremely radioresistant may atrophy. There is marked fibroplasia and stenosis. There may be little clinical manifestation of these changes or, in other cases, after a latent period of months or years various sequelae such as bowel obstruction, malabsorption or neoplasia may appear.

As we have said, significant injury only follows relatively large doses of x-radiation but various other factors may come into play. The small bowel is more susceptible than is the large bowel. Individuals vary in their susceptibility, the light-complexioned, blue-eyed redhead is most sensitive and the dark-complexioned, brown-eyed brunette is least sensitive.

Injury commonly occurs during the treatment of cancer of the female genitalia which



is a very common cancer, often treated with radium and/or x-ray.

The rectum is a fixed structure lying immediately behind the uterus so it is always in a position to receive heavy exposure from any irradiation delivered to the genitalia. The bladder lies just enough higher and away that it is far less often affected.

If the patient has had a previous pelvic inflammation or a lower abdominal operation, a loop of ileum, or occasionally the sigmoid, may be adherent to the pelvic structures where it receives heavy exposure during irradiation therapy. This is often the case when carcinoma develops in the stump left behind after subtotal hysterectomy.

The more advanced the stage of cancer, the more vigorously it is apt to be treated in the hope of obtaining a cure even at the risk of undesirable side effects such as intestinal injury.

Finally, there were faulty factors in older treatment methods which have been largely eliminated today, but which account for many of the injuries in our series: 1) The treatment of genital cancer was quite vigorous, using large doses of intracavitary radium followed by large doses of external x-ray, and in the case of endometrial cancer, followed by total abdominal hysterectomy and bilateral salpingo-oophorectomy. 2) The x-rays came from fixed sources and in order to use multiple ports the patient had to be turned and held in position with sandbags. It was all too easy day by day to be out of line so the rectum would be in the direct pathway of the beam. 3) A 20 or 30 mgm. capsule of radium was made by loading with multiple five or ten mgm. needles. These were intended to stay in alignment but if they overlapped or slid into parallel, a "hot spot" of heavier dosage existed. 4) A Y-capsule was used in the treatment of endometrial carcinoma with two, or sometimes three, of the arms loaded with 20 mgm. of radium. If isodose curves are drawn around each arm it will be seen that a "hot spot" exists centrally which may easily affect the rectum lying just posterior to it.

In spite of all these factors, the incidence of injury is low, reported as two per cent in the literature.

During the period 1933-1963 at Mercy Hospital, Chicago, we treated about 800 cervix cancers and 400 endometrial cancers

with irradiation; and we have collected only 26 cases that required surgical interference for intestinal injury. This is an incidence of 2.2 per cent.

Of these injuries about half occurred in cervical cases and half in endometrial, therefore, the likelihood of injury is twice as great in the endometrial cases.

The incidence of involvement of small bowel and large bowel was about equal.

TABLE  
Types of Injury

Immediate	Delayed
Enterocolitis	Stenosis - obstruction
Local Ulceration	Atrophy - malabsorption
Hemorrhage	
Perforation	Neoplasia
Bowel Obstruction	

Injuries may be classed in immediate and delayed categories. *Immediate injuries* are those that coincide with the period of treatment and recovery from it; this period may extend six, eight or even 12 months in some cases. These lesions are due to inflammation and necrosis.

Almost all patients treated with x-ray or radium to the pelvis in any sizeable dosage will develop some enterocolitis. This will be due to edema and superficial ulceration of the rectum and rectosigmoid with resultant cramping diarrhea and increased amounts of mucus in the stools. Simple supportive therapy is adequate.

If larger doses are delivered however, the reaction is proportionately more severe so that painful tenesmus accompanies defecation and enough fluid and blood are lost to require parenteral replacement. If these symptoms continue, a diversionary colostomy should be done to allow healing. In six to eight months it can be closed.

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*Local Ulceration.* When a "hot spot" exists during treatment in the small bowel, colon or rectum, a local ulcer forms. This ulcer may bleed freely, it may perforate causing local abscess formation and/or fistula (we have not seen generalized peritonitis), or it may be accompanied by local edema and kinking sufficient to cause intestinal obstruction.

A rectovaginal fistula is of course a form of local ulceration but it is not often due to a "hot spot" from treatment but usually from the disappearance of tumor which leaves a void where it invaded the rectovaginal septum. We have included only the first type in our series of injuries.

#### ILLUSTRATIVE CASES

V.B.—A 41-year-old woman with cancer of the cervix was given 1500 mgm. hours of intracavitary radium three times at weekly intervals and at the same time a 3000r tumor dose of external irradiation. She had rather severe cramping and diarrhea at intervals for five months and then an acute bowel obstruction.

At surgery the midileum was impacted in the cul de sac and attached to the posterior surface of the uterus. When it was separated, a three cm. necrotic ulcer was found. The adjacent ileum was quite edematous and the calibre of the bowel above this area was much larger than below. Therefore, a localized resection of the ileum containing the ulcer was done and a double-barreled ileostomy was established which was closed three weeks later by resection and end-to-end anastomosis.

M.L.—A 57-year-old woman with endometrial cancer was given 2000 mgm. hours of intracavitary radium three times at weekly intervals with a Y-capsule and at the same time 3000r of external irradiation. Eight weeks later a total abdominal hysterectomy and bilateral salpingo-oophorectomy were done.

She had considerable diarrhea which became progressively more severe, accompanied by severe cramping and tenesmus. Six months after treatment, a punched-out necrotic ulcer 1.5 cm. in diameter could be seen 12.5 cm. from the dentate margin in the

anterior rectal wall. At surgery, the pelvic structures were adherent but could be freed by dissection. An anterior resection of the rectosigmoid was done with an end-to-end anastomosis plus a complementary transverse colostomy which was closed three weeks later.

R.W.—A 45-year-old woman with leucorrhea. A cervical cytology was reported Class III. Work-up led to discovery of an endometrial carcinoma. She was treated with Y-capsule 2000 mgm. hours three times and a 3400r tumor dose of external irradiation. Ten weeks later a total hysterectomy and bilateral salpingo-oophorectomy were done.

She had a stormy course with distention, cramping and diarrhea which continued for a year when bowel obstruction became complete.

At surgery multiple loops of ileum were adherent to one another. When separated a totally necrotic segment of terminal ileum ten cm. long was found. A resection of the terminal ileum and right colon was done with end-to-end ileocolostomy.

G.J.—A 30-year-old, very small woman with cancer of the cervix had been treated elsewhere. Soon after treatment considerable abdominal cramping and diarrhea began and a clinical picture of incomplete bowel obstruction appeared. She developed a copious irritating discharge from the vagina and the obstructive symptoms were relieved. An ileal ulcer had perforated into the vagina. A very irritating vaginitis and vulvitis developed.

At surgery multiple loops of ileum were impacted in the pelvis with pronounced kinking. There was much edema and induration; cleavage planes were lost. The ileum immediately proximal to this was transected, the distal end closed and the proximal end was brought to the ascending colon where an end-to-side anastomosis was made. The vaginal drainage decreased and the vaginitis healed.

*Delayed Injuries* are those that appear after recovery from treatment seems to be complete. After a latent period of good health lasting from a few months to many years the symptoms develop; they are due to fibrotic stenosis, atrophy and neoplasia.

*Stenosis.* As the areas of ulceration which have not caused immediate complications heal, fibrosis leads to varying degrees of stenosis. While incomplete obstruction is



present, there may be episodes of cramping and diarrhea from time to time which are often dismissed as due to an irritable bowel or a gastroenteritis. However, when obstruction becomes complete the lesion is discovered.

*Atrophy.* Instead of local stenosis, an occasional patient will develop generalized atrophy of the involved segment or segments of the intestine. The mucosa becomes thin, smooth and pale, and lacks absorptive and secretory powers. This is of little consequence except in the terminal ileum. Then a sprue-like condition occurs with chronic diarrhea, malnutrition, progressive weight loss and various avitaminoses, especially B<sub>12</sub> with resultant macrocytic anemia.

*Neoplasia.* Any tissue which has been irradiated heavily is subject to neoplastic changes. Such neoplasia takes ten years or more to develop. When carcinoma "recurs" in the irradiated cervix ten, 20 or even 30 years later as it does, this is very likely a new radiation-induced cancer and not a persistence or recurrence of the old cancer. The same chain of events may occur in the rectum which has been the site of a radiation ulcer.

#### ILLUSTRATIVE CASES

A.H. was a 42-year-old tall, thin woman with endometrial carcinoma. She was treated with three Y-capsule insertions 2000 mgm. hours each, but the external irradiation was interrupted at 2000r because of an unusually severe local and general reaction.

Five years later, she developed bouts of cramping and diarrhea which gradually became more severe until she was explored surgically some 16 years after treatment. The terminal ileum contained three areas of stricture. This was resected and an ileocolostomy was done. The mucosa of the resected bowel was very atrophic.

She lived ten years longer—her weight declined steadily, she was prone to diarrhea, edema of the legs, rhagades and cheilitis and finally she developed a macrocytic anemia.

W.O.—A 50-year-old woman with endometrial carcinoma was treated with the usual intracavitary Y-capsules, external irradiation and hysterectomy. Following treatment she had frequent bouts of cramping and diarrhea and five years later a bowel obstruction developed.

At surgery there were two very stenotic areas just proximal to a large diverticulum which contained five laminated, highly polished enteroliths. This segment of bowel was resected and an end-to-end anastomosis was done.

M.D.—This lady developed amenorrhea at the age of 35 years. Ten years later she observed vaginal spotting but she did not seek medical advice for two years. Then an endometrial cancer was found.

She had the customary Y-capsule insertion three times, external irradiation and hysterectomy ten weeks later.

She was well for six months when blood and mucus appeared in her stools and defecation became painful. On proctoscopic examination a stenotic area was present at 12.5 cm. from the dentate margin. Repeated biopsies were negative. A low anterior resection of the rectum was done with an end-to-end anastomosis and complementary transverse colostomy. The colostomy was closed three weeks later.

S.G.—Another case of endometrial carcinoma was treated in the usual manner. Seven years later on several occasions she had bright blood in her stools. Proctosigmoidoscopy revealed no pathology but barium enema demonstrated a constricting lesion in the lower sigmoid which was considered to be a primary carcinoma. At surgery a sharply localized lesion suggesting an irradiation stricture was found and resected. An end-to-end anastomosis was done without a complementary colostomy.

E.K.—A 36-year-old woman with an adenocarcinoma of the cervix was treated with three straight capsule insertions, 1500 mgm. hours each, and external irradiation in a 3000r tumor dose.

Four years later she developed abdominal distension and had symptoms of incomplete bowel obstruction. Scout films of the abdomen revealed a greatly distended sigmoid. At surgery a localized stenosis of the lower sigmoid was found with a tremendously dilated bowel above it. A bypass was made from the transverse colon to the rectosigmoid below the obstruction and six weeks later the colon between was resected.

A.A. was another patient who had been treated elsewhere. At the age of 41 a cancer of the cervix was discovered and treated with x-ray and radium. One year later rec-



tal bleeding was considered to indicate more cancer so she was treated with external irradiation again. We saw her shortly thereafter because of rectal hemorrhages.

Repeated proctoscopic examination and biopsy revealed only an irradiation ulceration on the anterior wall of the rectum behind the cervix. After conservative management including repeated blood transfusions, this lesion healed. She was followed regularly thereafter.

Nine years later a simple vulvectomy was done because of painful atrophy and fissuring due to irradiation changes in that area.

The skin over her sacrum began to break down progressively and later the anterior wall of the rectum in the area of the old radiation ulcer became necrotic. Biopsies revealed an early adenocarcinoma. An abdominoperineal resection was done in continuity with the skin over the sacrum. The defect was grafted. She remains well eight years after this operation.

#### PRINCIPLES OF SURGICAL TREATMENT

From the foregoing cases, it can be seen the corrective surgical procedures may be grouped as — diversionary, resective and plastic.

*Diversionary operations* include ileocolostomy and colostomy. Ileocolostomy is used to bypass injuries in the terminal ileum. Occasionally, it is the initial operation in a two-stage resection of an ileovaginal fistula.

Colostomy is used as a temporary bypass for irradiation proctitis of the distal colon and/or rectum. In this situation the transverse colon is used so the sigmoid will be available later should it be needed to bridge the gap left if resection of the damaged distal colon becomes necessary. Colostomy also is used as a temporary bypass to protect a low rectal anastomosis.

Colostomy is used as a permanent bypass for rectovaginal fistulas when no tumor remains. In this situation the sigmoid is used since the more solid stool present in this part of the colon is easier to handle.

*Resective operations* range from simple excision with end-to-end anastomosis to total pelvic exenteration.

When excision of small or large bowel lesions is done, the surgeon must move proximally and distally far enough to secure normal bowel for anastomosis. Usually this is only a matter of a few centimeters. Occasionally, a considerable length of terminal ileum needs to be resected; than an ileocolostomy to reestablish continuity is the simplest procedure.

Low anterior resections of rectal injuries may be difficult but if preliminary proctoscopic examination reveals a healthy segment below the lesion, the anastomosis usually heals without complications if it is protected by a temporary proximal colostomy. These colostomies should be closed three to six weeks before the anastomosis begins to stenose.

When a rectovaginal fistula is present and one is reasonably certain that there is no residual cancer, a permanent sigmoid colostomy is the safest solution. The patient should have careful follow-up examinations to anticipate recurrences. When the cancer remains or cannot be satisfactorily excluded however, a pelvic exenteration is indicated.

*Plastic operations* have little place in the treatment of these injuries. Dissection through irradiated tissues leads to sloughing and breakdown. Therefore, plastic operations are rarely satisfactory and this is especially true in the treatment of rectovaginal or vesicovaginal fistulas following irradiation. An occasional sharply localized stricture in the small intestine will lend itself to a Heineke-Mikulicz type of correction.

#### SUMMARY

X-radiation injuries to the intestinal tract are not common and they are apt to be complicated. Treatment may require major surgical procedures but the results in general are good; we had only one operative death in our 26 cases. These complications are infrequent enough *not* to bring disfavor to the irradiation treatment of genital cancer. □

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# Rehabilitation in Oklahoma

FRANCIS E. DILL, M.D.

*The manner and method in which rehabilitative services to the people in Oklahoma are being offered to the disabled.*

IN THE EARLY DAYS, when medical practitioners were primarily concerned with the prevention and treatment of illness, the knowledge of community resources to aid patients was not given much importance. Today, however, society is concerned not only with treatment and cure, but also with restoring as many individuals as possible to economic and social usefulness. Vocational rehabilitation services are a resource that all physicians can use in serving patients.

The State Vocational Rehabilitation Agency is a division of the State Department of Public Welfare. The director of the division is responsible to the Director of Public Welfare for operating the vocational rehabilitation program. Concerned primarily with the vocational rehabilitation of disabled individuals, the agency serves clients through 55 offices located over the state. Rehabilitation counselors and appropriate supervisory personnel in these offices provide rehabilitation services for eligible disabled persons.

In the beginning the concept of "disability" was limited to persons with physical impairments, which generally were obvious, such as amputees, blind people, and polio victims. Gradually the concept of disability broadened to include hidden disabilities, in-

cluding heart disease, diabetes, convulsive disorders, mental illness and mental retardation.

With the advent of modern social thinking and practice, rehabilitation has come to mean principally the restoration of a person to his former mental or physical capacity. In this discussion rehabilitation refers to a combination of disciplines, techniques, and specialized facilities which are intended to provide physical restoration, psychological adjustment, personal vocational counseling, job training and placement.

The term rehabilitation has been defined as "restoration of the handicapped to the fullest physical, mental, social, vocational and economic usefulness of which they are capable." It aims to define, develop, and utilize the assets of the individual.

No single agency can rehabilitate disabled people. The complete job calls for the cooperation of many groups and professions, and requires medical skills, psychological skills, social work skills, and skills related to education and employment.

## ELIGIBILITY

Vocational rehabilitation services are available to any disabled Oklahoman of legal working age or who will be of working age by the time services are completed, and who meets the following eligibility requirements:

1. Physical or mental disabilities with resultant limitations of activities as determined by medical examinations and other special evaluations.
2. Limitations resulting from disability which constitute a substantial handicap to employment.



3. A reasonable expectation that vocational rehabilitation services will render the individual fit to engage in a gainful occupation.

Rehabilitation potential and eligibility are determined by the agency without regard to sex, race, creed, color or national origin of the individual. No group will be excluded from the program or found ineligible solely on the basis of the type of their disability.

#### SERVICES AVAILABLE

Disabled persons are referred to the Vocational Rehabilitation from many sources—doctors, hospitals, welfare agencies, employment services, schools, and others. Their contacts are with the rehabilitation counselor who represents the agency.

The objective of the agency is to provide to each eligible individual, all the vocational rehabilitation services necessary to achieve rehabilitation. "Vocational rehabilitation services" means any goods and services necessary to render a handicapped individual fit to engage in a gainful occupation.

These services may include:

1. Diagnostic and related services. A medical examination is required in every case. This examination *does not* mean acceptance, it merely helps to determine the extent of disability, to discover possible hidden or secondary disabilities, to help determine how much work the person can do, and to aid in determining his eligibility for services.

2. Individual counseling and guidance through all steps of the rehabilitation proc-

ess to help the disabled person select and attain the proper employment.

3. Medical, surgical, psychiatric, and hospital care, as needed to remove or reduce the disability.

4. Prosthetic appliances, such as artificial limbs, hearing aids, and braces to increase a person's ability to work.

5. Training in trade and vocational schools, colleges, on-the-job arrangements, and sheltered workshops as preparation for employment.

6. Maintenance and transportation expenses, if necessary for treatment or training.

7. Occupational tools, equipment, and licenses, as needed to help the person get started in his employment.

8. Placement in an appropriate job that the disabled person can do, and one for which he has been thoroughly prepared.

9. Follow-up after placement to insure that the person is suitably employed and that his employer is satisfied.

Referral to Vocational Rehabilitation Agency soon after a disability occurs and early detection of special problems in students before the dependence solidifies allows more effective and successful rehabilitation.

Medical services through Vocational Rehabilitation are under the direction of the Medical Advisory Committee of the State Department of Public Welfare.

When people cannot return to their usual occupation after an injury or illness, they should be referred to the Vocational Rehabilitation Agency. This referral is a great service to the people themselves as well as to the community because most disabilities can be corrected much easier early rather than to let them be a drain on state resources. To return disabled people to gainful employment is not only good medicine but also good public policy. ☐

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# The Drug Problem Among Young People

DANA L. FARNSWORTH, M.D.

THE CURRENT publicity attending the unauthorized use of drugs by young people has convinced the general public that drug taking is a new problem. It is not. For thousands of years, alcohol, peyote, marijuana, hashish, opium and other substances which produce similar effects (such as laughing gas [nitrous oxide], ether and glue solvents) have been used to alter human consciousness and distort the ordinary sense of, and responses to, reality. What is new, however, is the high incidence of young people participating in "the drug scene" and the extent of acceptance or encouragement of it by influential members of the literary and academic worlds.

Of all the hallucinogenic agents, LSD (lysergic acid diethylamide) and marijuana (cannabis) are at present the most widely used. Less extensive use is made of mescaline, bufotenine, psilocybin and dementhyl-tryptamine.

The pharmacological qualities of LSD are discussed in a recent article by the Commit-

tee on Alcohol and Drug Dependence of the AMA Council on Mental Health.<sup>1</sup> As yet, research has not established LSD as an effective treatment for any disorder. Such research, however, is gravely handicapped by emotional reactions toward the drug engendered by its irresponsible and illicit use.

The chief objection to the use of LSD arises from the growing body of evidence that it produces irreversible changes in the life style and personality of those who use it. Physiological changes are suggested in Cohen's work on chromosomal disruption.<sup>2</sup>

Psychological changes usually include impairment of the subject's ability to make realistic judgments. An individual who is under the influence of LSD can ignore facts previously held to be valid and construct new beliefs, no matter how irrational. Such forms of thinking bear much similarity to psychosis. A person may feel that he has powers which he did not previously have, or that certain laws of the environment (such as vulnerability) are not operative in his case. For example, feeling omnipotent, he believes that he can jump out of a window without being hurt. Wishful thinking becomes prominent. Preoccupation with isolated aspects of sensory experiences may replace all other sensations. Most characteristic of all is the abandoning of long-term patterns of striving, which Freedman and Powelson<sup>3</sup> describe as follows:

Presented before the second general scientific session of the 100th Annual Meeting of the West Virginia State Medical Association at The Greenbrier in White Sulphur Springs, August 25, 1967.

Reprinted, by permission, from the December, 1967, West Virginia Medical Journal.



"LSD enthusiasts talk of religious conversions, the awakening of artistic creativity, the reconciliation of opposites. The main change to be observed in such individuals, however, is that they have stopped doing anything. The aspiring painter talks of the heightening of his aesthetic sensibilities and skills, but he has stopped painting. The graduate student who withdrew from writing his dissertation in philosophy talks of the wondrous philosophical theories he has evolved. But nothing is written. It seems that the world of fantasy has become far more compelling than external things. Indeed, fantasy is substituted for reality."

One enthusiastic user of LSD and marijuana says, "It has been —'s experience, and many others, including my own, that the mind-drugs, the hallucinogens, do very interesting and wonderful things and greatly open the mind to the creative processes." To an observer he appears to have abandoned the usual efforts to be clean, neat and presentable; he has failed in college, has no job (and doesn't want one), yet insists that he has achieved happiness. Like many other users of the hallucinogenic drugs, he insists that physicians who take care of those who become disturbed or psychotic know nothing about the drugs, refuse to see their good qualities, and are in no position to judge them because they have not taken them themselves. Clinical reports of persons involved in acute and chronic psychoses, suicide, or even murder are discounted by the more ardent advocates of drug usage as being so few in number as to be insignificant.

In the past, most users of illegal drugs had deprived socio-economic backgrounds and poor social and educational records, a tendency to criminal behavior, and preferred narcotics to other drugs. In general, the new users come from the middle class, have had good educational experiences, and often are involved in intellectual or creative pursuits. When drug use changes their attitude and capacity for judgment, the differences are much more noticeable than they are in the more deprived groups.

The evidence of harmful effects of marijuana is less clear than that of LSD. In fact, many people insist that its use has no disadvantages other than being illegal, and some groups are campaigning vigorously for legalization of marijuana. A comprehensive presentation of the proponents' arguments

appears in Ginsberg's<sup>4</sup> *Atlantic Monthly* article "The Great Marijuana Hoax."

On the other hand, there are those who maintain that marijuana's dangers go beyond the legal ones. As with the drug's advocates, its opponents' points of view constitute a spectrum, with some objecting on moral grounds, some on the basis of its psychological and physiological effects, and some who do not oppose use of marijuana *per se* but interpret it as a sign of young people's personal and societal difficulties and an unconscious call for help.

Keeler<sup>5</sup> has reported 11 instances of adverse reactions to marijuana. Some of them were of psychotic proportions and included panic, fear, depersonalization, gross confusion and disorientation, depression, and paranoid reactions. Four subjects became schizophrenic (with thinking disorders and inappropriate affect) after extensive use of marijuana, amphetamine and LSD. Keeler is of the opinion that marijuana can produce psychotic disorders of a serious degree and that its use can initiate destructive changes in life style. When there are differences of opinion on this latter point, the "patient" approves the change but most other persons do not.

My experience, and that of my colleagues at the Harvard University Health Services, support the contention that the use of marijuana does indeed entail risk. In fact, we find it to be harmful in many ways and to lack counterbalancing beneficial effects. Many students continue to think it is beneficial even while their grades go down and while other signs of decrease in responsible and effective behavior become apparent.

#### SOME CHARACTERISTIC COMPLICATIONS

A few characteristic complications of marijuana usage will serve to illustrate our concern:

A 21-year-old woman was involved in a conflict with her mother regarding choice of serious dating partners, following which she renounced her religion, drank to excess, and

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became promiscuous. When she became fearful of the effects of drinking she began smoking marijuana regularly. She then became depressed. To combat her depression she used more and more marijuana and, on one occasion, after smoking an unusual amount, slashed her wrists and was admitted to a hospital. Under psychotherapy she improved, stopped using drugs, and resumed effective academic work.

A 19-year-old man with high moral standards became depressed, used marijuana to combat an acute depressive episode, experienced "black despair," and then obtained sedative pills from a friend which he took in an attempt at suicide. After admission to a hospital and subsequent treatment for his depression, he improved and has resumed his studies.

A 20-year-old woman with a long history of emotional conflict became socially irresponsible, intermittently depressed and occasionally overactive and irritable. She tried marijuana to combat her symptoms but found that it was not giving her the "kick" she had sought. On the advice of friends, she began taking LSD with the hope that it would enable her to gain insight and become more aware of herself. Her potentially disastrous behavior continues and psychotherapy is refused.

A 19-year-old man with dirty clothes, unkempt hair and beard, in conflict with his parents, hopeless about society, has been taking benzedrine, dexedrine, marijuana and LSD, "to find out about himself." He views those who encourage him to avoid drugs as part of the hostile establishment who are infringing on his rights. His use of drugs serves as a barrier against development of the kind of satisfying interpersonal relations he desires as well as an obstacle to psychotherapy.

A senior premedical student with an excellent academic record, already admitted to a medical school, suddenly began to do failing work in one course. He said his energy had been diverted in trying to stop using marijuana, which he had begun using extensively during his senior year. When faced with the necessity of studying he found it easier to "take pot." Under its influence he was convinced that studying for examinations was not as important as other things. He wanted help, stating explicitly that he

considered the use of marijuana harmful because it encouraged him as well as his friends who used it to "evade reality and pursue illusory goals."

Another student denied that his extensive use of marijuana adversely affected his academic performance, but said that while under its influence he lost both the desire and ability to study. At the end of the semester his grades dropped precipitously. He refused psychiatric help, saying that although he knew he had an emotional problem, drugs had nothing to do with his academic difficulties. Whether or not he is right cannot be proven at present, nor is it relevant, since he is in trouble and does need some kind of help.

These cases illustrate some of the issues involved in the great marijuana debate. In no instance did marijuana cause the original conflict. On the other hand, it contributed nothing positive and probably added to the problems each person faced; indeed, it may have delayed or prevented effective approaches to the solution of their conflicts.

In one sense, it is misleading to talk about "the drug problem" as if it were an isolated phenomenon for, in fact, it is only one aspect of young people's position in contemporary society. If drug taking were not related to current social conditions and individuals' reactions to them, it would be much easier to deal with. But the issues are complex; that is, drug taking *means* something.

#### FASHIONABLE ASPECT

Undoubtedly, fashion has something to do with drug use. In some circles, and particularly among the young, experience with drugs has become a kind of social currency, a source of status and esteem. It is possible, therefore, that if drug taking were no longer condoned by most young people, the users, deprived of the gratification of peer approval, would turn to other (ideally more constructive) methods of dealing with their personal problems.

But if there were not more fundamental factors at work, drug taking would go the way of goldfish swallowing and telephone booth cramming. The fact that drug taking is illegal reveals its function as a form of rebellion and protest, and it is tempting to write it off as such—that is as a typical



"phase" of youth which should be ignored because its passing is inevitable, or treated with a get-tough policy. It would be wrong-headed, however, to do so; young people's rebellion is meaningful to them, and constitutes both a response to their situation and a way of dealing with it. Furthermore, their judgments often are more valid than older generations care to admit.

On a personal level, young people tend to suffer intense feelings of isolation and vulnerability. Present-day American society and its institutions often exacerbate these feelings. For example, the mass-produced is valued more, the man-made less than ever; both the government and colleges are becoming larger and more impersonal; and the individual's sense of being insignificant and helpless is increasing.

The process of attaining skill in the trades and professions seems to them at least uncomfortably long and sometimes irrelevant to their future activities. For many members of minority groups it is impossible. School is the only place most young people can be sent for training. When school programs are imaginative, relevant to past experiences and future expectations, and led by teachers whom the students can like and respect, students participate with enthusiasm. When curricula are dull, teachers uninspired, listless, underpaid and overworked, physical facilities inadequate, and support from parents and the community lacking, the students can hardly be expected to be enthusiastic about their education.

Moreover, young people are keenly aware of social injustice, the threat of nuclear war, and the ineffectiveness or downright hypocrisy of many of those in authority. They are confused about authority, not clearly appreciating that responsible authority permits a democracy to exist whereas irresponsible authority, or authoritarianism, is destructive of the democratic process. As a result of their confusion they often tend to reject all authority. Sometimes their criticisms of society become so generalized that they reject most conventional values, refuse to participate in a system they see as pernicious and focus instead, with drugs as their instrument, on their own subjective values and ex-

periences; this is the meaning of the phrase *turn on, tune in, drop out*, (e.g., marijuana often seems to them to produce a sense of greater fellow-feeling and better communication).

Because of their psychological effects, drugs temporarily help young people to escape their feelings of being alienated, under pressure, and helpless; simultaneously, the act of drug taking places each individual in a group of kindred spirits. He may feel better related to others even as objective observation shows him to be even more isolated than before.

Many young persons have not had the advantage of a family life in which they were trained for responsibility. One group of young former drug takers who appeared on a David Susskind show agreed that if their parents had been concerned about them and had been strict in setting standards for them to follow, the possibility of their becoming dependent on drugs would have been decreased. In their discussion they formulated the principle that concern without discipline is of little value and discipline by parents who do not really care about their children is useless.

Drug use and its associated forms of behavior have certain built-in limitations. They provide little permanent satisfaction. Short-range satisfaction is derived from peer group approval and publicity. Moreover, the overzealous (and sometimes blatantly wrong) activity of some law enforcement officials serves as justification or "proof" of the rightness of their own positions. The exaggerated concern accorded them by their frustrated and bewildered critics may encourage them to persist with their self-defeating activities longer than they otherwise would prefer. Since most of them seem to have no fixed income other than what they get from their families, and are not developing a capacity for responsible employment, they may ultimately tire of their vagabond existence. There is considerable evidence that many young people toy with various forms of asocial or antisocial behavior only to return to more responsible modes of living, often with strong dedication to the righting of social wrongs.

The methods by which alienated young people choose to show their disdain for con-



ventional values make rational thinking about their behavior difficult for older people. Whereas the young usually put high priority on love, peace, idealism, and similar attributes, their appearance and behavior often seem to be peculiarly designed to attract criticism. Long hair, outlandish fashions, lack of cleanliness, sexual laxity, disrespect for personal and public property, and a manner which appears arrogant and impulse-ridden frequently accompany experimentation with drugs. Irritation with specific forms of disapproved behavior tends to divert attention from the fundamental problem, i.e., the dissatisfaction of these people with the values they observe and their subsequent alienation, and direct it toward changing or forbidding the behavior considered undesirable. Attention to the reasons for alienation and disenchantment, if it is to be effective, must include respect for the individuals involved, and tolerance (but not necessarily approval) for their behavior.

#### THE PHYSICIAN'S ROLE

In their desire to express themselves the majority find satisfaction in their studies, their school associations, and the support they get from their families and friends. Others not so fortunately situated cannot resolve their conflicts (usually they are not even aware of what the conflicts are) and express themselves in delinquent acts, or poorly controlled impulse expression, or by showing no sense of social responsibility (or any combination of these). An even more serious result of the failure to develop a way of life that yields satisfaction is the development of mental or emotional illness. A new and disturbing aspect of hallucinogenic drugs is that they may permanently impair the judgment of people who experiment with them. These potentially capable young men and women could thus become permanent casualties of their struggle to give meaning to their existence, and we should find methods of preventing such a disaster if possible. Physicians are in a particularly good position to help educators develop such methods and should, therefore, acquaint themselves with the issues involved.

If we approach the solution of the drug problem with single-minded determination

to eliminate the drugs, or prevent their use by young people, we run the risk of adding to our difficulties rather than minimizing them. Drugs should be viewed as an incidental factor, considered in the same class as other forms of "acting-out" behavior (disrespect for property, acting on impulse, accident proneness, delinquency), and not as the central problem. This does not lessen the importance of appropriate laws for the control of potentially harmful drugs and support of law enforcement agencies. In showing such support, however, the physician should not be the punitive agent, thus depriving troubled people, who happen to use drugs as one of their attempts to deal with their conflicts, of one of their sources of effective help.

The American Medical Association, through its Committee on Alcohol and Drug Dependence and the Council on Mental Health, has prepared a series of statements on all the drugs about which medical authorities are concerned.

Those on narcotics,<sup>6</sup> barbiturates,<sup>7</sup> amphetamines,<sup>8</sup> marijuana,<sup>9</sup> and LSD<sup>1</sup> have been published in *JAMA*. An extensive monograph on alcoholism and a summarizing statement for the general public about the drug problem have been published separately.

Armed with the information contained in these publications, every physician can be of inestimable help to educators, law enforcement officials, clergymen, parents, leaders of young people's organizations, and others in each community who have a responsibility for keeping drug usage within reasonable and appropriate limits. Success in such an endeavor will depend to a large extent on gaining the understanding and support of the vast majority of young people who are interested in approaching the solution of problems facing them in sound and intelligent ways. Giving them the facts in terms that can be clearly understood, without moralizing, in combination with efficient enforcement of the laws covering distribution of these drugs, appears to be our most important weapon. □

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## Drug Problem / FARNSWORTH

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# Preparation of Outpatients For Proctoscopic Examination

JACK D. WELSH, M.D.

*The present study discusses various types of evacuants for bowel preparation prior to proctoscopy and the value of this examination prior to barium enema.*

THE DIAGNOSTIC value of sigmoidoscopy in patients with anorectal complaints or sigmoidoscopy as a routine procedure in asymptomatic individuals 40 years of age and older is well established. Only three per cent of polyps found by sigmoidoscopy are felt by digital examination.<sup>1</sup> Between 70 per cent and 80 per cent of all carcinomas of the colon and rectum occur within the reach of the sigmoidoscope. Early diagnosis and treatment of the patient with carcinoma limited to the wall of the colon has a five year survival, which is ten times greater than after there are distant metastases.<sup>2</sup> Routine sigmoidoscopy in hospitalized patients has been reported to be as beneficial in discovering unsuspected significant disease as the eight more commonly used routine screening tests, such as a blood count, urinalysis, blood urea nitrogen, blood sugar, recording of blood pressure, physical examination of the heart, serologic test for syphilis, and chest x-ray.<sup>3</sup> At the University of Oklahoma Medical Center a proctoscopic examination is required prior to all barium enema examinations. Since this necessitates additional discomfort to the patient, as well as personnel time, we evaluated the value of the procedure and

three bowel evacuants for convenience and effectiveness. A method of bowel preparation that produced minimal discomfort to the patient, required the least amount of nursing time and yielded satisfactory results was sought. The results of this study reconfirm the importance of a proctoscopic examination prior to a barium enema, and may be of benefit to others who prepare outpatients for proctoscopic examination.

## MATERIAL AND METHODS

Examinations were done on 371 outpatients. There were 149 males and 222 females. The age range was 14 to 88 years. More than half of the patients represented an older population; 39 per cent were 60 years of age or older and 52 per cent were 55 years of age or older. The outpatient examinations were performed usually one to seven days prior to a barium enema. It must be emphasized that many of these studies would not have been requested had they not been a required prerequisite to the radiographic examination.

Three methods for preparation of patients were utilized and evaluated: Clyserol\* disposable enemas in 50 patients, Dulcolax\*\* suppositories in 121 patients and Vacu-  
etts\*\*\* carbon dioxide-producing suppositories in 200 patients. The patient was directed to take two clear-water cleansing enemas upon retiring the night before the proctoscopic examination. One hour before

\*Clyserol, a disposable enema containing disodium phosphate and monosodium phosphate, supplied by Clyserol Laboratories, Inc., Oklahoma City, Oklahoma 73101.

\*\*Dulcolax, brand of bisacodyl, a contact irritant suppository, supplied by Geigy Pharmaceuticals, Ardsley, New York 10502.

\*\*\*Vacu-  
etts, an evacuant suppository containing sodium biphosphate anhydrous, sodium acid pyrophosphate, and sodium bicarbonate in a water-soluble base of polyethylene glycols, supplied by Dorsey Laboratories, Lincoln, Nebraska 68501.



the examination, done in the early afternoon the next day, one suppository (Dulcolax or Vacuetts) or a Clyserol enema was used.

The majority (63 per cent) of the examinations were performed by 11 general medicine residents under supervision and 37 per cent were done by two staff physicians. After each examination a note was made concerning the adequacy of preparation, appearance of the mucosa, distance the proctoscope was passed, diagnosis, and other pertinent information. The examiner did not know the type of evacuant utilized. Diagnoses of hemorrhoids, cryptitis and rectal fissures were not included in the analysis of the data.

#### RESULTS

##### *Pathology:*

The following diagnoses were made from the proctoscopic appearance: ulcerative colitis (5), stricture (10), carcinoma (4), polyps (27), localized inflammatory lesions (6), and diverticulae (2). The strictures were the result of radiation in one patient, lymphogranuloma in one, ulcerative colitis in two, and of unknown etiology in the remainder. Lesions in 45 patients were biopsied. The histologic diagnoses were: adenomatous polyp (23), pseudopolyps (3), ulcerative colitis (3) and carcinoma (4). The rest of the biopsy specimens demonstrated non-specific inflammation, melanositis coli, or normal mucosa. Twenty-four patients had mucus aspirated and placed in polyvinyl alcohol<sup>4</sup> for trophozoite studies. In two cases, one after Dulcolax and one after Vacuetts, *E. histolytica* trophozoites were demonstrated. Using direct visualization, biopsy or polyvinyl alcohol, one or more abnormalities were diagnosed in 51 (14 per cent) of the 371 patients.

##### *Adequacy of preparation and examination:*

The proctoscope was passed 20 to 25 cm in only 246 (66 per cent) of the patients. The reasons given for not passing the proctoscope to the full distance were: strictures, partial occlusion of the lumen by a tumor mass, spasm, painful rectal lesions, poor cooperation, inadequate positioning of obese patients, and inadequate preparation. Inability to pass the proctoscope past 17 cm depended more on the patient's pathology and

the skill of the examiner than the type of preparation used.

The bowel preparation was good in 251 (67 per cent), adequate in 65 (17 per cent), poor in 42 (12 per cent), and totally inadequate in 13 (four per cent). The results from each method used to prepare the patient are presented in table 1. Twenty-eight of the 55 patients with poor or inadequate preparation were 60 years old or older.

Two patients had mucosal damage from the Clyserol enema tip. Two others had pain from the enema tip. Five per cent had irritation from the Dulcolax suppositories. Mucosal hyperemia was more frequent after the Clyserol enemas and Dulcolax suppositories than after the Vacuetts. Occasionally, there was increased white fluid in the rectum after the Vacuetts. This was easily suctioned and caused no difficulty.

#### DISCUSSION

Routine proctoscopic examination prior to barium enema examination, utilizing diagnostic techniques, including biopsies and collection of material for parasites, appears to be a worthwhile procedure. In this study, one or more pathologic diagnoses were made in 51 (14 per cent) of the patients. It was of interest that in two cases, even after preparation with Dulcolax or Vacuetts suppositories, it was possible to isolate *E. histolytica*. This is significant, since after some preparations it is impossible to recover *E. histolytica*. In both cases the referring physician had not considered the diagnosis and it was only because the endoscopist collected mucus at the time of the endoscopy that the diagnosis was made.

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Table 1  
Results of Preparation

Preparation	Total No. Patients	Good or Adequate		Poor		Inadequate	
		No.	Per Cent	No.	Per Cent	No.	Per Cent
Clyserol	50	37	(75)	9	(18)	4	(8)
Dulcolax	121	104	(86)	14	(12)	3	(2)
Vacuetts	200	175	(88)	19	(10)	6	(2)

Some authorities have argued that bowel preparation prior to proctoscopy minimizes the detection of a possible source of bleeding. In the present study, however, good preparation was essential for adequate visualization, since many of the lesions would not have been detected by the barium enema. The results of the materials used for bowel preparation utilized in this study compare favorably with those in other reports.<sup>5-8</sup> The Clyserol enema contains a phosphate and initiates the defecation reflex by mechanical pressure in the rectal wall from an accumulation of osmotically retained fluid. It did not provide quite as good results as the suppositories and there were occasional mucosal changes from improper insertion of the enema tip. In addition, it was more difficult to administer in our clinic and required extra personnel. The Dulcolax suppositories have a direct action on the mucosal nerve plexi and stimulate colonic peristalsis through local neurogenic reflexes. Our results with this preparation were better than reported by some endoscopists.<sup>5, 8</sup> Although slightly more irritating than the Vacuetts, it was easily inserted by the patient and usually produced good results. The Vacuetts release on an average 230 ml of carbon dioxide, distending the rectosigmoid and producing an urge to defecate. It is important to moisten the suppository with tap water and not lubricant jelly, since the latter impedes the liberation of the carbon dioxide. Also, it is necessary to instruct the patient to delay the first urge to defecate which occurs in about ten minutes, and to hold the suppository for at least 20 minutes whenever possible. This preparation provided good cleansing in the majority of the patients, but was not quite as adequate in the older individual.

## SUMMARY

The present study of 371 outpatients at the University of Oklahoma Hospital had a two-fold purpose. First, it allowed us to evaluate the value of the routine proctoscopic examination prior to barium enema, and secondly, to compare three types of bowel evacuants for bowel preparation prior to proctoscopy.

One or more pathologic diagnoses were made in 14 per cent of the patients by proctoscopy. Many of these conditions would not have been detected by the barium enema. Therefore, the necessity of doing routine endoscopy prior to barium enema is reaffirmed, and it should be a definite prerequisite.

Bowel preparation, rated as good or adequate was found in 88 per cent (Vacuetts), 86 per cent (Dulcolax) and 75 per cent (Clyserol) of patients undergoing proctoscopic examination. Poor or inadequate results were due to painful rectal lesions, poor cooperation and inadequate positioning of obese patients. Comments on the correct use, convenience, and effectiveness of the three evacuants are made. □

For assistance with this study the author wishes to acknowledge the medical residents on gastroenterology rotation and Doctor G. Victor Rohrer.

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# Books As Clinical Tools

## CLINICAL REFERENCES ON PULMONARY DISEASES IN CHILDREN INCLUDING CYSTIC FIBROSIS

M. FLUX, M.D.

Pulmonary disorders account for a large segment of the illnesses of infants and children. Until recently only rather general information about these disorders such as that contained in standard textbooks of pediatrics by Nelson<sup>1</sup> and by Holt, *et al.*,<sup>2</sup> was available. The importance of respiratory diseases in infancy and childhood and the fact that their expressions are quite different from those of the same diseases when they appear in adult life are becoming increasingly appreciated. Furthermore, there is increasing evidence to indicate that respiratory disorders in early life are often related to or predispose the individual to certain chronic pulmonary diseases as adults. Because of this, several books specifically relating to respiratory diseases in infancy and childhood have become available.

The monograph, "*The Lung and its Disorders in the Newborn Infant*"<sup>3</sup> by Avery provides excellent treatment of the pulmonary disorders such as the respiratory distress syndrome and others which are peculiar to the neonate. This book is a must for physicians concerned with the newborn.

Two recently published books provide comprehensive reviews of all the respiratory disorders of infancy, childhood and adolescence and are excellent references. Both have a pediatric orientation in that they emphasize the important differences in the manifestations of various diseases in the developing as opposed to the mature subject. The first of these, "*Pulmonary Diseases and Anomalies of Infancy and Childhood*"<sup>4</sup> by Levine and Mascia in addition to the more common pulmonary disorders provides sound treatment of congenital abnormalities of the cardiovascular and respiratory system and acquired non-infectious problems such as inhalation accidents involving foreign bodies and poisons. The second, "*Disorders of the*

*Respiratory Tract in Children*"<sup>5</sup> edited by Kendig is larger and provides an even more detailed and comprehensive review. This is an excellent source of information on all forms of respiratory diseases from the common to the rare and exotic ones. It also provides the reader extensive reference sources for further information about a specific condition.

One of the most serious pulmonary problems of children and young adults, which is gaining more and more recognition, is cystic fibrosis of the pancreas. Until relatively recently most of the advances in its treatment were related to its gastrointestinal component. However, the pulmonary complications are now beginning to receive major attention. Unfortunately, most of the standard textbooks and even books devoted to respiratory diseases, cannot remain current in view of the rapidity with which information is becoming available concerning this disease. Standard textbooks of pediatrics<sup>1,2</sup> provide satisfactory information concerning the etiology, pathophysiology, clinical picture and other details of cystic fibrosis but are not current especially as regards treatment. The chapter by Lobeck, in "*The Metabolic Basis of Inherited Disease*,"<sup>6</sup> is also a very satisfactory source of information. There are also two monographs which are devoted specifically to cystic fibrosis and are highly recommended. "*Guide to Diagnosis and Management of Cystic Fibrosis*"<sup>7</sup> is an informative and comprehensive syllabus for practicing physicians edited by the professional education committee of the National Cystic Fibrosis Foundation. It provides a useful summary of the general knowledge related to the diagnosis and management of fibrocystic disease. Another relatively new publication "*Cystic Fibrosis*,"<sup>8</sup> the proceedings of a British symposium, is also useful. However, as with many similar disease entities in which advances are coming rapidly, the physician must rely on current journals which appear frequently. The recent review by diSant'Agnese and Talamo,<sup>9</sup> in the New England Medical Journal is an excellent up-to-date reference on cystic fibrosis.

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One of a series sponsored by the Department of Continuing Education, University of Oklahoma Medical Center.



A new textbook, "*Respiratory Physiology*,"<sup>10</sup> provides an up-dated reference on physiological aspects of respiration and respiratory diseases.

With the increasing awareness of the importance of respiratory disorders in infants, children and adolescents, the demand for additional monographs and texts will undoubtedly also increase. □

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## ABSTRACTS

### EFFECTS OF EXPERIMENTAL PULMONARY CONTUSION ON RESPIRATORY EXCHANGE AND LUNG MECHANICS

The authors studied the effects of contusion with a falling weight of open and closed-chest anesthetized dogs. The sequence of physiological changes and the response of injured lungs to positive pressure ventilation were noted. The findings similar to the pulmonary contusion syndrome seen in humans include: X-ray changes—focal discoid atelectasis and emphysema (microscopically-atelectasis and air trapping are seen); abnormal air pressure-volume curves presumably from bronchiolar edema and obstruction causing air trapping; abnormal pulmonary surfactant by 24 to 48 hours; and hypercarbia, hypoxia, and acidosis noted after contusion and becoming more marked by 48 hours. The latter changes were readily corrected by positive pressure ventilation.

The importance of such studies becomes evident when it is realized that chest injuries assume a large role in trauma. Twenty-five per cent of the 53,000 deaths from auto accidents in 1965 were from chest injuries. Pulmonary contusion alone carries a mortality rate of 38 per cent.

Early after injury even with significant blunt trauma to the chest the patient may not complain of chest pain or may have only mild hemoptysis and early chest films may be negative. Signs of respiratory insufficiency then begin to appear within 24 to 36 hours with hypoxia, pneumonitis, oxygen desaturation, and respiratory acidosis. By this time the patient has become refractory to treatment and autopsy examination shows edematous, hemorrhagic lung with minimal pneumonitis. The major sources of such injury are auto accidents, falls, crush injuries, explosions and nonpenetrating gunshot wounds.

Effects of Experimental Pulmonary Contusion on Respiratory Exchange and Lung Mechanics. Robert T. Nichols, Henry J. Pearce, and Lazar J. Greenfield, Arch. Surg., 96: 723-730, 1968.

**Reviewer's Note:** The authors' work would emphasize necessity of early recognition of this syndrome and

treatment with positive-pressure ventilation.—Carman Bloedow, M.D.

### ACUTE MYOCARDIAL INFARCTION COMPLICATED BY COMPLETE HEART BLOCK

The authors recount their experience with the use of the transvenous pacemaker in eight patients with the above complication, which is reported to occur in five to eight per cent of all infarctions. The bipolar catheter was inserted through the right basilic vein and the demand pacemaker positioned in the apex of the right ventricle. The demand pacemaker monitors the electrocardiogram at the catheter tip. The electrical impulse is related to the preceding QRS complex by a pre-set time interval. When the spontaneous rate is slower than the pacemaker rate, the impulse is delivered; if higher, the impulse is inhibited. If the pacemaker receives no signal, it automatically becomes a fixed rate pacemaker.

The use of the transvenous pacemaker allows rapid control of the cardiac rhythm and digitalization in the patient with an acute myocardial infarction with heart block. A permanent pacemaker may later be inserted through the external jugular vein. The pacemaker was able to be removed 24 to 48 hours after a stable sinus rhythm was restored. The authors felt that anticoagulation was to be recommended with the use of this type pacemaker. In their cases patients prior to death developed recurrent episodes of cardiac arrest, ventricular fibrillation, syncope, and hypotension. Seven of their eight cases responded to pacing with rapid improvement. Transvenous pacing offers a rapid transient means of handling the problems that arise with complete heart block in association with an MI. Usually 80 per cent of these patients will revert to their original rhythm within several weeks.

Acute Myocardial Infarction Complicated by Complete Heart Block. W. G. Johanson, Dallas and C. A. Guenter, Oklahoma City. The Journal-Lancet 87(10): 393-397, 1967. □

Reviewed by Carman Bloedow, M.D.



## Acute Effects of Ethanol on The Coronary Circulation and Myocardial Contractility

JIRO NAKANO, M.D.\*  
ANDERS NORRBY, M.D.\*\*

**E**THANOL is a very widely used pharmacological agent with rather potent CNS stimulant and depressant actions. In addition, ethanol has been advocated as an effective drug in the treatment of patients with angina pectoris. The precise pharmacological effects of ethanol on the heart and circulation are little appreciated by the majority of physicians. The purpose of the present communication is to review the experimental observations of the effects of ethanol upon the coronary circulation and myocardial contractility.

In 1786, Heberden first employed alcoholic beverages in the treatment of patients with angina pectoris. Since then, ethanol has been used rather extensively in clinical medicine without critical experimental studies on the mode of its action on the coronary circulation. Presently, there exists controversy among the investigators in the effect of ethanol on the coronary blood flow. In 1907, Dixon first reported that low concentrations (100-200 mg/100ml) of ethanol dilate the coronary vessels, whereas higher concentrations first constrict and then dilate the coronary vessels in the isolated cat heart. Sulzer<sup>7</sup> found that 210-490 mg/100 ml of ethanol always decreased coronary sinus blood flow in the dog heart-lung preparations. Recently, Regan, *et al.*,<sup>5</sup> also observed that the i.v. injection of 0.1 ml/kg/

min of 15 per cent ethanol decreased significantly myocardial blood flow and stroke volume in anesthetized dogs. On the other hand, Lasker, *et al.*,<sup>2</sup> showed that the i.v. injection of ethanol in doses up to 500 mg/kg (blood level, 70 ml/100 ml) increased both coronary sinus and arterial blood flows in dogs although systemic arterial pressure fell significantly. The increase in coronary blood flow usually began at the end of the infusion and remained elevated for approximately 25 min. Recently, Ganz also found that the i.v. injection of 58 ml/kg/min of ethanol increased coronary sinus blood flow in dogs. The observations made on dogs in this laboratory<sup>4</sup> showed that the rapid intra-coronary artery injection of 1-15 mg/kg of ethanol and the i.v. injection of 5-500 mg of ethanol first decreased and then increased the coronary arterial blood flow. It was concluded that the initial reduction of coronary blood flow was caused by the direct coronary vasoconstricting and the hypotensive action of ethanol. On the other hand, the secondary rise was most likely caused by hypoxia-induced coronary vasodilatation and also probably a direct and reflex sympathetic stimulation mediated through ethanol-induced hypotension. Although not fully explainable, the persistent decrease in coronary blood flow observed by Sulzer<sup>7</sup> and Regan, *et al.*,<sup>5</sup> may be secondary to marked reduction in cardiac output and/or cardiac work induced by ethanol. Recently, Siegel reported that ethanol caused a marked increase in epine-

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phrine and a slight increase in norepinephrine levels in both arterial and portal venous bloods in dogs. The increase in coronary arterial blood flow observed by Lasker, *et al.*,<sup>2</sup> Ganz and in this laboratory<sup>4</sup> could be partially due to the increased catecholamine secretion by ethanol.

The anti-anginal effect of ethanol is more or less due to its CNS depressant action. Stearns, *et al.*, found that therapeutic doses (15 ml, q.i.d. for one week) of whisky neither shortened the duration of attacks of angina pectoris nor increased the work capacity of the patient with angina pectoris. Russek, *et al.*, also found that whisky (15-30 ml) given five to 30 minutes before a standard exercise test failed to prevent the ECG changes. In contrast, 0.4 mg of nitroglycerin given to the same patients five minutes before the test either completely prevented or significantly modified the ECG changes. In spite of these objective differences, whisky appeared as effective as nitroglycerin in preventing angina pectoris induced by the standard exercise test. These observations seem to indicate that any effects of ethanol observed in patients with angina pectoris are due to its depressant action upon the CNS.

Although Dixon showed cardiac stimulant action of ethanol in isolated rabbit heart, Sulzer<sup>7</sup> and Wakim showed that more than 300 mg/100 ml of ethanol decreased heart rate and myocardial contractility, and caused progressive cardiac dilatation in the dog heart-lung preparations and the isolated turtle heart. Loomis<sup>3</sup> found that this myocardial depressant effect of ethanol was

markedly enhanced in the presence of hypoxia. In animals with intact circulation and in human subjects, toxic amounts of ethanol not only depress directly myocardial contractility but also indirectly reduce ventricular function through its depressant action on the medullary vasomotor and respiratory centers. Haggard, *et al.*, and Loomis<sup>3</sup> reported that, in rats and dogs, respiratory failure induced by ethanol intoxication (400-1000 mg/100 ml) caused myocardial hypoxia and consequently cardiac failure with arrhythmias. Even in animals under artificial respiration, Sulzer,<sup>7</sup> Regan, *et al.*,<sup>5</sup> and Nakano, *et al.*,<sup>4</sup> invariably observed that in dogs ethanol in blood levels equivalent to those attained by social drinking, decreased myocardial contractility and dp/dt, and increased left ventricular end-diastolic pressure. Spann, *et al.*,<sup>6</sup> showed that the magnitude of the negative inotropic action of ethanol was greater in the failing myocardium than in controls.

It may thus be concluded that the use of ethanol in the treatment of patients with angina pectoris is contraindicated, and furthermore, ethanol ingestion is detrimental to patients in congestive heart failure. □

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Mt. Sinai Hospital, New York

**Sept. 24 THE MEDICAL INTERVIEW (60 Min.)**

Allen Enelow, M.D., Professor and  
Chemist, Department of Psychiatry  
Michigan State University College of  
Human Medicine  
Dale Groom, M.D., Associate Professor of  
Medicine, Medical College of South Carolina

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## REGIONAL POSTGRADUATE EDUCATION TAKES NEW COURSE

A new approach to regional postgraduate courses has been announced by the OSMA and the OU Medical School. The courses, conducted each year in cooperation with the school of medicine, offer Oklahoma physicians an opportunity for a continuing education program taught in the proximity of their offices.

In the past the subject matter for the courses taught was determined by the medical school's faculty and OSMA's Council on Professional Education. This year, however, four of the courses will be "Current Problem Conferences."

John Drake, M.D., Chairman of the OSMA Council on Professional Education, explained that these will be special conferences to study specific problems in the region. Doctor Drake stated, "We have contacted many physicians in one region and the idea has been well received."

The sites for this year's postgraduate courses have also changed. Two, and perhaps more, will be conducted at state lodges on Friday afternoons. This will give physicians an opportunity to bring their families with them to the meetings. In preparation for the "family type" meetings, the OSMA Auxiliary has planned programs to run concurrently with the scientific lectures.

A special production of the play "Lady on the Rocks" will be presented at the meetings and all guests are invited to attend. The play will be performed by a Tulsa acting group and has been highly acclaimed by members of the auxiliary. It is the dramatic story of a woman's realization that she has a drinking problem.

At the conclusion of the scientific

lecture and the Woman's Auxiliary program, there will be a cocktail party and dinner.

The first of the new postgraduate courses was held Friday, September 13th, at Western Hills Lodge on Fort Gibson Reservoir. The next one will be held Friday, October 4th, at Texoma Lodge on Lake Texoma. The scientific program will be "Newer Attitudes About Stroke, Its Formation and Therapy."

Other postgraduate courses will be:

October 16th—Lawton Country Club, "Management of Edema State"

October 23rd—Woodward, Yeager's Restaurant, "Current Problem Conference"

October 31st—Altus, "Current Problem Conference"

November 15th—Shawnee, "Current Problem Conference"

November 20th—Stillwater, Holiday Inn, "Current Problem Conference"

December 13th — Enid, Midwestern Inn, "Management of Edema State"

Drake, explaining the selection of the course sites, stated, "We divided the state into four regions based on population and then selected the meeting site on the basis of convenience and most acceptable accommodations. We hope the locations will be agreeable and that we have good attendance. In particular, we hope that by holding the meetings in state lodges, wherever possible, we can encourage our physicians to bring their wives and families with them." □

## Regional Medical Program Seeks Project Funds

On July 23rd, 1968, the Advisory Council of the Oklahoma Regional Medical Program approved proposals for nine different operational projects. The ORMP Advisory Council is a group of private citizens which includes nine practicing physicians, and representatives of public and private health agencies, professional societies, hospitals, and other health and educational institutions. These nine operational projects are the principal element in a proposal for the development of a regional operational program which would begin in 1969. This proposal will be reviewed at the national level by a group of private citizens acting as advisors to the Department of Health, Education and Welfare. A decision concerning funding is expected in the latter part of 1968.

The largest of the operational proposals is a coronary care program which would be a cooperative effort of 43 Oklahoma hospitals to improve the care of patients with acute myocardial infarction by strengthening programs of training and continuing education, and by developing a system for remote monitoring of patients in small hospitals. In this way, superior care could be provided in smaller hospitals with a minimum of equipment and of highly-trained manpower. Nurses with highly-sophisticated training in hospitals of intermediate or large size would monitor not only their own patients, but they would also monitor patients in remote units of smaller hospitals. Other projects include a regional emphysema program, a project to improve diagnostic services for cancer of the breast, a project to improve library and information services, a pilot continuing education program with the



development of a learning center at Enid, a cancer control program for the Tulsa area which would eventually involve other communities in Northeast Oklahoma, a program of interagency cooperation to promote education in the field of smoking and health, a regional program in nutrition and diabetes, and a regional urology program with special emphasis on improving continuing education and services in cancer of the prostate.

There are now more than 40 health and educational agencies and institutions involved in the Oklahoma Regional Medical Program. The University of Oklahoma Medical Center serves as the coordinating agency for these activities which now involve more than 50 communities in the state. Details concerning the history of the program, its objectives and the methods to be used in its implementation had been described in previous issues of the Journal. The May, 1967, issue (pages 282-285) gave a detailed account of the development of the program.

The proposed operational program is the result of two years of planning. The program will be directed by Dale Groom, M.D., who will assume this responsibility on October 1st, 1968. Doctor Groom is, at present, director of the continuing education activities of the Medical College of South Carolina. He is a national leader in both cardiology and continuing education. Doctor Groom, a native Oklahoman, is currently serving as President of the Mayo Foundation. Most Oklahoma physicians are familiar with Doctor Groom because of his many appearances on medical television programs including those sponsored by the Oklahoma State Medical Association and the University of Oklahoma Medical Center.

Details concerning these activities are available through the Oklahoma Regional Medical Program, 800 N. E. 13th Street, Oklahoma City, Oklahoma, 73104. □

## Clinical Society To Meet at Skirvin Hotel

Oklahoma City's Skirvin Hotel will be the site of the 38th Annual Fall Conference of the Oklahoma City Clinical Society to be held October 28th, 29th, and 30th.

Highlighting an outstanding list of guest speakers will be Edward R. Annis, M.D., a Trustee and Past-President of the American Medical Association. He will speak at noon on Monday, October 28th. James L. Luke, M.D., Oklahoma State Medical Examiner, will be the luncheon speaker on Tuesday, October 29th.

On Monday morning, October 28th, a panel of eight members of the University of Oklahoma Medical Center faculty will present "What's New and What's Usable of What's New." Participating in the discussion will be: Thomas A. Bruce, M.D., Clarence A. Guenter, M.D., Carl W. Smith, M.D., G. Rainey Williams, M.D., Roger I. Lienke, M.D., Marshall D. Schechter, M.D., J. Darrel Smith, M.D., and Kathryn L. West, Ph.D.

Surgical Grand Rounds will be held Tuesday afternoon, October 29th, at Baptist Memorial Hospital, St. Anthony Hospital and the University of Oklahoma Medical Center. Case material with comments will be presented by Frank Glenn, M.D., New York, and Raleigh R. White, III, M.D., Temple, Texas.

"The Failing Circulation" will be the topic of a symposium jointly sponsored by the American College of Cardiology, to be held Wednesday, October 30th. Speakers will be: Ben D. McCallister, M.D., Harold T. Mankin, M.D., Sheldon G. Sheps, M.D., and Robert G. Siekert, M.D., all from the Mayo Clinic and Foundation, Rochester, Minnesota, and Marion de V. Cotten, Ph.D., and Webb M. Thompson, M.D., from the University of Oklahoma School of Medicine.

### Additional Speakers

Listed among the other guest speakers are: Stewart A. Fish, M.D., University of Tennessee (Obstet-

rics); Frank Glenn, M.D., Cornell University Medical College (Surgery); Victor C. Hackney, M.D., University of Indiana School of Medicine (Dermatology); Irwin H. Kaiser, M.D., University of Utah College of Medicine (Gynecology); Wyland F. Leadbetter, M.D., Harvard Medical School (Urology); Kinsey M. Simonton, M.D., Mayo Clinic (Otolaryngology); Leon Salzman, M.D., Georgetown University School of Medicine (Psychiatry); and Raleigh R. White, III, M.D., Scott and White Clinic, Temple, Texas (Surgery).

Plans for social events and entertainment for wives of attending physicians will be announced later. □

## N.F.V. Barkett Named Aetna Medical Consultant

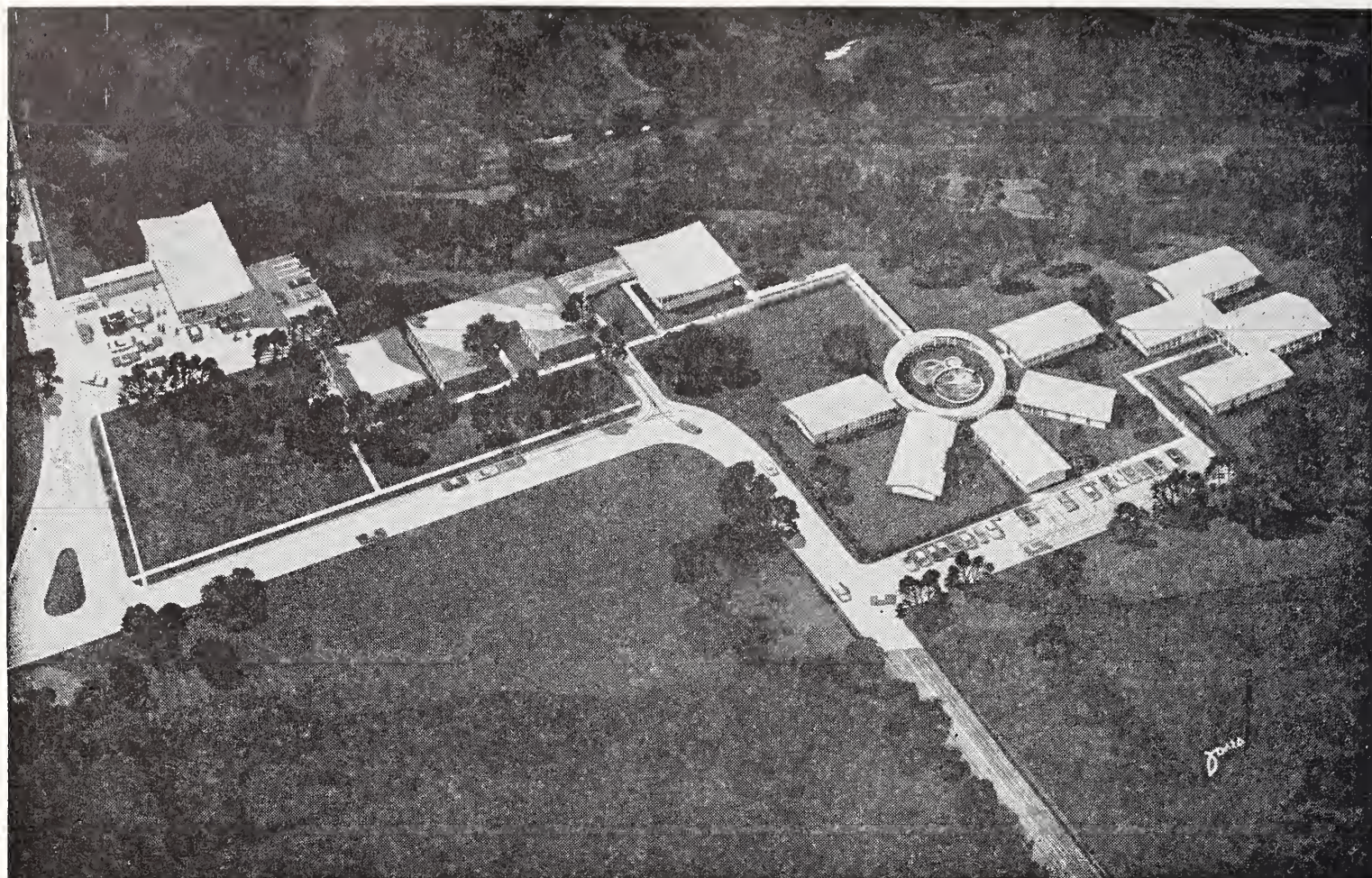
Aetna Life and Casualty Company, Medicare Part B carrier for Oklahoma, has announced that N.F.V. Barkett, M.D., has agreed to function as a consultant to the carrier.

Barkett, well-known Oklahoma City surgeon, will function to assist Aetna personnel with claims that their lay staff are unable to process due to lack of medical knowledge. On occasion he will probably need to contact physicians directly for clarification of certain claim items.

Federal regulations require that Medicare Part B carriers have an established procedure for reviewing questionable claims. However, this regulation does not require that the review be made by a doctor of medicine. Doctor Barkett's employment at this post was endorsed by OSMA officials.

The 53 year-old physician graduated from the OU Medical School in 1939 and is a board certified surgeon. He served in the United States Army during World War II and in 1944 opened a private practice in Oklahoma City. He is on the faculty of the University Hospital and OU Medical Center as a full clinical professor of surgery and is attending surgeon for VA Hospital. He holds staff appointments with full surgical privileges in every major hospital in Oklahoma county. □





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## OSMA Group Visits Europe

Sixty-six people visited Europe for 23 days on an OSMA sponsored tour of six countries from July 17th through August 7th. Pictured above in front of the beautiful Heidelberg Castle in Germany.

## AMA President Dedicates OU Medical Center's "Project Responsibility"

The \$500,000 Wakita Community Health Center was officially dedicated Saturday, September 14th, by Dwight Wilbur, M.D., President of the AMA. The center is an outgrowth of Project Responsibility, a program to improve health services where needed over the state.

The dedication ceremonies were planned to coincide with Wakita's celebration of the 75th anniversary of the opening of the Cherokee Strip. Doctor Wilbur's address was the keynote for the ceremonies.

The AMA President stressed the importance of such projects as the Wakita Center to the total health manpower of the United States. He pointed out that well-planned facilities in outlying areas can serve more people with better health care.

The Wakita Center is the pilot rural health unit project for Project Responsibility. It is a combination clinic - hospital - nursing home, with beds for seven acute cases, 20 extended care, and 24 nursing home patients.

It will be staffed by three physicians, and allied health personnel, who will hold University of Oklahoma Medical Center teaching appointments.

One phase of Project Responsibility is the tailoring of educational programs at the medical center to better meet the health manpower needs of Oklahoma—in both rural and urban communities.

Another aspect is the development of rural community health centers to find out and demonstrate how health services can best be provided in medical "have-not" areas.

Thomas C. Points, M.D., Project Responsibility Coordinator, announced recently the appointment of Jim Feist of Manchester, Oklahoma, as the administrator for the center. Feist has recently completed his master's degree work at Oklahoma University.

Construction of the \$500,000 center was financed by the residents of Wakita, a community of some 500 persons in Grant county, north central Oklahoma. □

## Scientific Showcase To Open at AMA Clinical Convention

A showcase of scientific achievements and studies will be seen in Miami Beach, Florida, December 1st-4th, when the American Medical Association holds its 22nd Clinical Convention.

A total of 125 scientific exhibits, covering a variety of medical disciplines, will be set up at the convention center. The displays will be available for viewing from noon Sunday until the session ends Wednesday afternoon.

Live color telecasts dealing with medical problems will be shown on Monday, Tuesday and Wednesday to complement the general session by providing additional educational information. The television programs will cover obstetrics-gynecology, cerebral vascular disease and amputee and stroke rehabilitation.

Also, about 30 medical motion pictures will be shown as part of the scientific program at the 22nd Clinical Convention.

At least five premiere showings are planned. Among these are "Shock and Recognition and Management" and "Granulomatous and Ulcerative Colitis: Diagnosis and Differential Diagnosis."

A film symposium, with panel discussion, is planned on "Problems of Chest Pain." A question-and-answer session will be included.

The scientific program for the 1968 Clinical Convention will be published in the October 21st issue of *The Journal of the American Medical Association*.

Continuing education will get big emphasis at the Clinical Convention. On December 2nd-4th postgraduate courses will be offered on diabetes, fluid and electrolyte balance and thyroid disease.

And four breakfast roundtables, which have proved to be highly successful at past sessions to discuss many facets of medicine, are scheduled. In addition, there will be clinical workshops on eye problems, cardiovascular disease, diabetes and office urology. □





DONALD L. COOPER, M.D.

## Cooper To Be Olympic Physician

Donald L. Cooper, M.D., Stillwater, will be one of four team physicians for the U.S. Olympic team in Mexico City this fall. The Oklahoma physician will be serving with Dan Hanley, M.D., of Bowdoin College, Maine; Bill McAusland, M.D., Harvard; and Pete Riehl, M.D., of Tulane.

All team members and physicians will report to Denver, Colorado, on October 1st for final check-ups and outfitting in Olympic clothing and uniforms. The group will then move to Mexico City for final workouts until the Olympic Games officially open on October 12th.

The entire U.S. party will number approximately 500 coaches, officials, athletes, ancillary help, and physicians. Office and clinic space for the physicians will be located in Olympic Village near Mexico City.

Cooper is apparently the first Oklahoma physician to ever serve in this capacity. He is the Director of the Oklahoma State University Hospital and Clinic in Stillwater and is a nationally recognized authority on the medical aspects of athletics. □

## Public Schools Teach Doctor's Aids

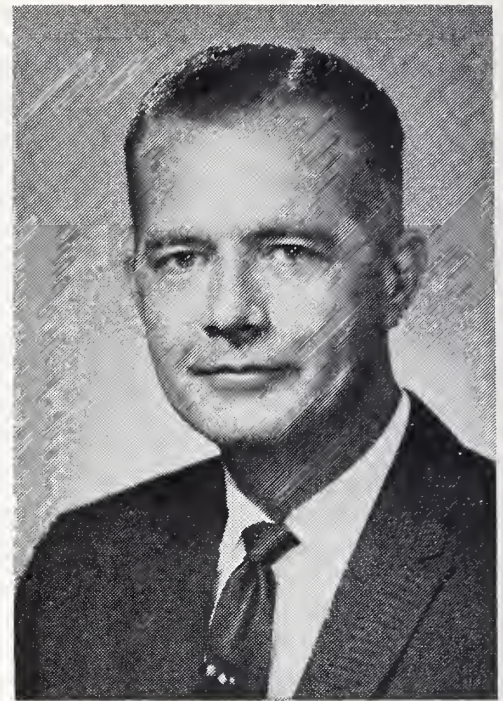
The Education Committee of the Oklahoma County Medical Assistants chapter of the American Association of Medical Assistants has reported the formation of a course for medical secretaries and assistants in the Vocational-Technical Schools of the Oklahoma City public school system. Similar programs are underway in Tulsa, Enid, and are planned for Ardmore.

A one-year program for high school seniors, three units of credit are earned toward graduation upon completion of the two semesters. Prerequisite is one year of typing.

The Oklahoma City course will be taught in the beautiful new modern surroundings of the Area Vocational-Technical Center at 4901 South Bryant. A former medical assistant with executive secretary experience, as well as an academic background in teaching, psychology, and English majors, has been selected to teach the program.

At present there are no plans for students to spend internship periods in local physicians' offices for on the job experience, but this is a future goal and objective of the program. An advisory committee and executive council are being selected to work with this specific program, composed of medical assistants (with instructor experience), physicians, medical society officials, continuing education specialists, representatives from the nursing, hospital administration, and pharmaceutical professions, laboratory and radiology technologists, and vocational training specialists.

Up to date texts, reference material, and instruction manuals have been selected which are to be supplemented with original material compiled by the medical assistants instructors. Twenty students are scheduled for the morning hours of the course, and an equal number for the afternoon class. □



REX KENYON, M.D.

## Kenyon Appointed To Legislative Compensation Board

Rex Kenyon, M.D., has been appointed to the newly created Board on Legislative Compensation by Speaker of the House of Representatives, Rex Privett. The Oklahoma City pathologist will be the board's representative from a "professional" field.

The board was created by the people of the State of Oklahoma on August 27th when they voted to accept State Question 462. This question calls for an amendment to the Constitution of the State of Oklahoma to establish a nine-member Board on Legislative Compensation. The members are to be appointed by the Governor, the President Pro Tempore of the Senate, and the Speaker of the House of Representatives.

The five members appointed by the Governor are to represent individuals from religious organizations, communications media, non state-supported educational institutions, labor organizations, and retail business. The President Pro Tempore of the Senate will appoint individuals from agriculture and civic organizations while the Speaker of the House of Representatives appoints representatives from professional fields and manufacturing.



This constitutional amendment question was an outgrowth of a recommendation from a special legislative compensation study commission created two years ago.

The late Dwight Whelan, Associate Executive Director of the OSMA, served as vice-chairman of the commission and was one of the authors of the final report submitted to all state government leaders. Whelan was killed in an automobile accident shortly after the final report was issued.

Kenyon, a former OSMA president, and current alternate delegate to the AMA House of Delegates, and the eight other board members are required to review the compensation paid to members of the legislature every two years. The constitutional

amendment also impowers them to change the compensation as they see fit. The members of the board receive no compensation for their services and no member of the legislature may be appointed or serve on the board.

Ex-officio non-voting members of the board will be the Chairman of the Tax Commission and the Director of State Financing. The Governor will appoint the Chairman of the board.

The final report of the study commission pointed out that Oklahoma legislators are ranked among the lowest compensated in the United States. The financial burden created by service in the state legislature forced many well-qualified men to refuse to seek election or re-election. □

## Beware the Goober Pea!

(Continued from Page 445)

other crops likely to mold contamination including soy beans, corn, rice, wheat, barley, peas and beans.

In the case of the peanut, careful elimination of all injured kernels, rapid drying and storage in low moisture atmosphere will effectively reduce mold contamination. Moreover, means are available for inactivating the toxins without destroying nutritive value of the food.

Thus another suspect is added to the etiology of cirrhosis of the liver—peanuts, the bar jockey's manna. Until this matter is satisfactorily resolved it might be well to insist that full illumination be provided in all pubs so that systematic inspection of each and every peanut can be effectively made.—Richard W. Payne, M.D. □

## DEATHS

SAMUEL J. BRADFIELD, M.D.  
1888-1968

Samuel J. Bradfield, M.D., 79-year-old Tulsa surgeon, died August 11th, 1968.

A native of Ridgeway, Kansas, Doctor Bradfield graduated from the University of Oklahoma School of Medicine in 1915. He established his practice in Bartlesville in 1917. In 1927, he moved to Tulsa, where he completed over a half-century of practice.

The Oklahoma State Medical Association presented Doctor Bradfield with a Fifty-Year Pin in 1965, recognizing his many years of faithful service. The same year, he was named "Doctor of the Year" by the Auxiliary to the Tulsa County Medical Society.

LAWRENCE W. FERGUSON, M.D.  
1903-1968

A long-time Lawton physician, Lawrence W. Ferguson, M.D., died in Lawton August 4th, 1968. A native of Lexington, Oklahoma, Doctor Ferguson graduated from the University of Oklahoma School of Medicine in 1928. Following an internship in Texas, he established his practice in Lawton in 1929. He was a member of the Oklahoma Chapter of the American Academy of General Practice.

R. J. STILLWELL, M.D.  
1896-1968

Oklahoma City physician, R. J. Stillwell, M.D., died August 30th, 1968. A native of Neosha Falls, Kansas, Doctor Stillwell moved to Oklahoma in 1924. He was a member of the 1929 graduating class of the University of Oklahoma School of Medicine. □

## Book Reviews

**INFECTIOUS DISEASES OF CHILDREN.** Saul Krugman and Robert Ward. Fourth Edition. 428 pp. St. Louis: C. V. Mosby Company, 1968. \$16.50.

Because the changes in the field of infectious diseases have been so rapid and dramatic, frequent revisions of this excellent book have become necessary. This represents the fourth edition in the past decade. For example, the development and increasing use of virus vaccines both old and new have exerted a profound effect on the changing pattern of various infectious diseases. Poliovirus vaccines have virtually eliminated paralytic poliomyelitis from the highly developed countries of the world and the widespread use of live attenuated measles virus vaccines has been followed by significant drop in the incidence of this disease in the United States.

Krugman and Ward's *Infectious Diseases of Children* has established itself as a standard reference with pediatricians, other physicians who deal with children and those with a particular interest in infectious diseases. This edition, as is the case with the previous three makes no claim that it is a comprehensive compendium covering all aspects of



infectious diseases. For example, it does not include chapters on tuberculosis, syphilis, malaria, yellow fever, the leptospiroses and various mycotic infections. It does discuss and cover in an excellent fashion the more common infectious diseases involving children. Particularly commendable are the schematic drawings which illustrate and compare the cutaneous eruption of various exanthematous diseases and the diagrams illustrating the predominant clinical features of certain infections. It includes nine excellent color plates illustrating such lesions as the pharyngeal membrane in diphtheria, Koplik's spots, reactions to smallpox vaccination and the rash of scarlet fever.

This edition includes new chapters on the congenital rubella syndrome and on septicemia of the newborn as well as updated information on *Salmonella* infections.

This edition continues the high standards of excellence set by previous ones and it is to be highly recommended for students, house officers and physicians dealing with infectious disease.—*Harris D. Riley, Jr., M.D.*

#### **MICROBIAL PROTOPLASTS, SPHEROPLASTS, AND L-FORMS.**

Edited by Lucien B. Guze. 523 pages, illustrated. Baltimore: Williams and Wilkins, 1968. \$24.50.

This book is the outgrowth of an interdisciplinary conference held at the Upjohn Company's Brook Lodge in November 1966 and concerns an important and timely subject in the field of infectious diseases. What is it that maintains some infections—such as pyelonephritis—and makes them chronic? Indeed only a few years ago the subject of this symposium would have been considered inappropriate and it has only been through the persistence of a few investigators that the study of microbial protoplasts, spheroplasts, and L-forms is now accepted as an authentic discipline. There are 77 contributors to this volume and the compilation of papers is divided in-

to four major sections dealing respectively with mechanism of formation, morphology and functional correlation, general considerations and the role in disease. There are 46 original contributions. At the time of the conference the authors could not agree on definitions of certain commonly used terms including most of those in the title. Nevertheless, most sections are of high quality, adequately documented and contained excellent photomicrographs and diagrams. There is some repetition and perhaps too much speculation. However, it is a report of the status of ongoing research in this field and includes sufficient background information to make it an up-to-date source book on the entire topic.

All of the contributors agreed that protoplasts, spheroplasts and L-forms are bacterial variants which are deficient in cell wall and therefore unduly susceptible to osmotic shock. Park speculates that penicillin-like antibiotics not only cause production of defective walls but also allow muralytic enzymes to be formed, thus accounting for the specific ability of these antibiotics to produce L-forms and protoplasts. There is considerable background material and recent work on biochemistry, genetics, and experimental biology related to this and other related subjects. Less certain is the role of some of these bacterial forms in human disease. They have been considered in relationship to the persistence of bacteria in the urinary tract and other infections, to rheumatic fever, to diseases of the joints and other serosal surfaces. This section will be of particular interest to clinicians concerned with infectious diseases.

This book will provide an excellent introduction for those approaching this subject for the first time. It will also be helpful to the clinical bacteriologist. It can be recommended as an excellent reference and source book on this subject.—*Harris D. Riley, Jr., M.D.*

**ANNUAL REVIEW OF PHARMACOLOGY.** Edited by H. W. Elliott, W. C. Cutting and R. H. Dreisbach.

Volume 8, 594 pages. Palo Alto: Annual Reviews, Inc., 1968. \$8.50.

This, the eighth in this series, presents 26 topics in pharmacology. This volume begins with a personal biography of A. R. Cushny, one of the fathers of pharmacology. As in past issues, a chapter is devoted to a summary of work done in a foreign country, usually one behind the Iron Curtain. Anichkov reviews highlights of Soviet pharmacology. Several other pertinent topics including developmental pharmacology, pharmacokinetics, renal pharmacology and up-to-date reviews of thyrocalcitonin, extrarenal excretion of drugs and chemicals and other timely topics are reviewed. Peters provides a good review of genetic factors in relation to drug therapy. The volume is capped off by the "Review of Reviews" by Chauncey D. Leake.

This is a good source for investigators and physicians interested in pharmacology because many of these topics have not previously been covered in a comprehensive fashion in other publications.—*Harris D. Riley, Jr., M.D.*

#### **INTRA-UTERINE DEVELOPMENT.**

Allan C. Barnes, M.D. cloth, 530 pp.; illustrated, Philadelphia: Lea and Febiger, 1968. \$18.50.

This monograph is made up of 27 chapters written by 26 investigators most of whom are or were associated with the Johns Hopkins University School of Medicine. It is edited by Allan C. Barnes, Director of the Department of Gynecology and Obstetrics there. It is addressed primarily to physicians who care primarily for pregnant women and summarizes current knowledge of the development of the fetus and the nature of the difficulties which occur during this period of life. As the editor states in the preface that in the past 30 to 40 years maternal mortality has been reduced by 95 per cent and the mortality for children between the ages of one and 14 about 85 per cent. However, the newborn death rate has been reduced by only slightly over half in the white population and slightly less than half in non-whites. He clearly points out



that the point of attack on this situation is increased knowledge of the development of the intra-uterine passenger together with an increased awareness of the techniques for diagnosing fetal jeopardy. The editor is to be commended for emphasizing to physicians responsible to the pregnant woman their responsibility for the fetus.

Although Barnes has written only the preface and one chapter, it is clear that his thinking has extended beyond this. The majority of the contributing obstetricians are members of Barnes' department at Johns Hopkins. This explains why continuity and readability are preserved to a level unusual in textbooks with multiple contributors.

The book is organized into three major portions: 1—conception and placentation; 2—growth and development; and 3—chromosomal aberration. The first section opens with an excellent review by Rafferty of the events of ovulation to implantation. There is also discussion of sperm transport, fertilization, anatomy and physiology of the placenta and of embryonic fluid. The sections by Seeds on amniotic fluid and fetal water metabolism and on placental transfer are particularly good. The following 11 chapters grouped as a section on growth and development deal with the morphologic growth and development of the several organ systems of the fetus with emphasis on metabolic and hormonal aspects. This is in general an up-to-date review of the embryology and fetal development of the various organ systems. The chapter on hemoglobin is lengthy and rather tedious in detail. A third portion is entitled chromosomal aberrations but in addition to this covers the effects of drugs and chemicals in the fetal environment and teratogenic and other factors including radiation, viral infections, maternal diabetes and various maternal influences and hemolytic disease. The final chapter is concerned with the initiation of respiration in the neonate and the status of the newborn infant.

This is an excellent book and should be in the library of every physician responsible for the pregnant

woman and her fetus. Perhaps the only criticism is that it could have been further strengthened if contributions from some of the pediatric pioneers at the editor's institution had been included since many of them have contributed so much to our knowledge in this field.—*Harris D. Riley, Jr., M.D.*

**MYOTATIC, KINESTHETIC AND VESTIBULAR MECHANISMS**, a CIBA Foundation Symposium. Edited by A. V. S. de Reuck, M.Sc., D.I.C., A.R.C.S., and Julie Knight, B.A. 331 pp. Boston: Little, Brown and Company, 1967. \$13.50.

This is the third in a series of symposia designed to cover the various areas of sensory function. As with other CIBA Symposia, this will probably be of interest only to a certain number of investigators working, in this particular case, in the vast field of postural mechanisms in man and animals. The symposium is divided in four sections. Section 1 is an excellent discussion of the anatomic and functional properties of the muscle spindle and muscle stretch reflex. Sections 2 and 3 deal with the vestibulospinal pathways and their influence upon spinal reflex activity. Section 4 is devoted to the presentation of some "clinical aspects" of vestibular mechanisms. Most of this section is dedicated to the discussion of new techniques of otoneurological diagnosis. Each of the sections will appeal to a different group of investigators and probably none of them will be of much interest to the clinician. As pointed out in the chairman's closing remarks—a symposium of this type is liable to be found "guilty of introducing more conundra than suggestions" for the solution of the problems under investigation. CIBA Foundation should be congratulated for making possible this series of uninterrupted dialogues between outstanding international scientists. Even though the clinician will have a hard time reading this symposium, he can find consolation in the fact that the "physiology and pathophysiology of today will be the medicine of tomorrow." —*Jorge C. Lagos, M.D.* □

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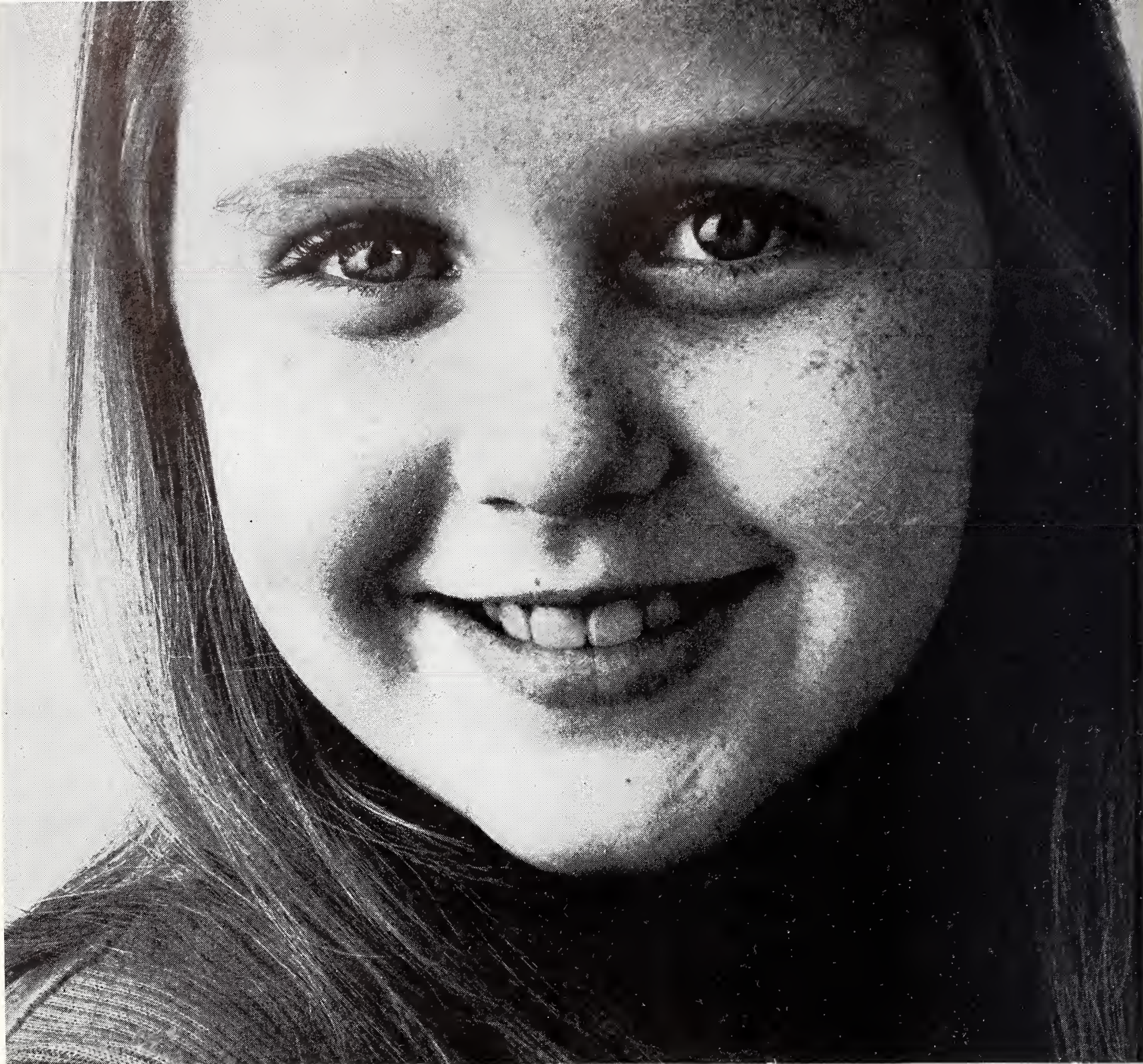


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The

JOURNAL

OCTOBER  
1968  
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**Geigy**



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# BEN H. NICHOLSON, M.D.

1904-1968

This is a humble attempt to pay tribute to one of the great people I have had the privilege to know. Doctor Ben H. Nicholson died suddenly at his home in Oklahoma City on September 25, 1968, at the age of 64, of a myocardial infarction while editing a manuscript for the *Journal*.

Several years ago at a national meeting, I was first introduced by one of my professors to Doctor Ben—despite our closeness, my profound respect for him never allowed me to refer to him in any other fashion. We conversed for certainly no more than three minutes and afterwards my professor remarked, "There is one of the six true gentlemen in the world." Over each of the next several years, Doctor Ben anonymously carried out in my behalf a thoughtful and generous gesture (which space prevents detailing) for no reason that I could ever learn except for this brief meeting and my impecunious state as a research fellow and then a junior faculty member at another university. He never knew that I was aware that he was my anonymous benefactor. When the invitation to join the faculty at the University of Oklahoma came, this thoughtful act and his presence here were important factors in my acceptance.

Doctor Ben was born in 1904 in Harri-man, Tennessee. He joined the staff of the Oklahoma City Clinic in 1931, after graduating from Vanderbilt University, where he received his internship and residency training in pediatrics.

Since joining the faculty in 1931, he was always vitally interested in the University of Oklahoma Medical Center and for several years served as Clinical Professor of Pediatrics. For years he devoted several hours a day without pay to the various programs at the Children's Memorial Hospital. A day or so before his death he conducted a student clinic. The high regard in which he was held is evidenced by the fact that he was Chairman of the Curriculum Committee, the most important committee of the School of

Medicine, a member of the committee to select the Vice-President and Dean, as well as many others. He was invaluable to me as an advisor and counsellor in matters relating to departmental policy.

Doctor Ben was a master pediatrician and was widely sought as a consultant. He was a "doctor's doctor," caring for literally hundreds of children of medical students and physicians. I have never seen a physician to whom children were so quickly attracted and in whom they immediately had such complete trust.

His contributions to the improvement of child health in this region were enormous and it is impossible to list all of them. Perhaps among the most important were the establishment of the Section on Pediatrics at the Oklahoma City Clinic and at the Presbyterian Hospital, his involvement and support of programs at the Children's Memorial Hospital, his long activities as a pediatric consultant to the Department of Public Welfare and many, many others in the interest of children.

Doctor Ben was a true scholar. His breadth of knowledge in so many fields was astonishing. He was one of the few persons to graduate from the famed Webb School in three years. He was a prodigious reader, regularly covering the medical literature, all types of history and novels. The latest important best-seller was invariably present on his bedside table. He loved classical music and regularly attended the opera. He was interested in athletics and was an avid golfer.

He was the author of more than 75 medical publications. He served as Editor-in-Chief of the *Journal of the Oklahoma State Medical Association* and in 1961 the *Journal* was judged the best state medical journal in the nation.

In 1930 he married Winifred "Tom" Tucker, one of the most genteel ladies I have ever known. She was a wonderful companion to him and together they epitomized the perfect couple. He is also survived by four children, seven grandchildren, a sister, and his



mother, Mrs. Frank Nicholson, of Columbia, Tennessee.

Many adjectives have been used in describing Doctor Ben, including humble, honest, loyal, genuine, dedicated, gentle, scholarly, compassionate, and others. He exemplified every one of these. Of his many fine characteristics one that perhaps stood out over all others was his love for people. He was able to find something good in every person he knew. Doctor Ben was undoubtedly one of the most perceptive persons I have ever known. He was fascinated by young people and had great confidence that the future of this country was in excellent hands.

His contributions are being acknowledged in a unique and deeply significant fashion. The University of Oklahoma is establishing the annual *Ben H. Nicholson Memorial Lectureship*.

I can say without fear of contradiction that few have or will make as great a contribution to the welfare of children or to medical education in Oklahoma or this region. Ben Nicholson was, indeed, one of the world's true gentlemen. He was a great man and one of the best friends I've ever had. The opportunity to know him was a rich privilege which I shall always treasure.—  
*Harris D. Riley, Jr., M.D.* □

## OSMA JOURNAL / editorial

### *Subacute Sclerosing Panencephalitis (Dawson's Encephalitis) and Infection with Measles Virus*

IN 1933 AND 1934, Dawson of Vanderbilt University described an unusual type of subacute progressive encephalitis in children, which has subsequently been called Dawson's disease. To distinguish this from epidemic and other types of encephalitis, Dawson suggested the name "inclusion encephalitis." Since his original description, the disorder, although uncommon, has been recognized increasingly. It is characterized by the presence of Type A intranuclear inclusion bodies in cortical neurons and glial cells. In 1945, van Bogaert reported the findings in three patients with a similar illness and described the disease as a "subacute sclerosing leukoencephalitis." In retrospect, his three cases were probably examples of Dawson's disease. The disorder has subsequently been termed subacute sclerosing panencephalitis (SSPE). Only 21 cases from the United States have been reported. In Oklahoma, one case has been seen recently at the Children's

Memorial Hospital, University of Oklahoma Medical Center and given specific therapy. Recently, evidence has accumulated indicating that SSPE is related to a chronic infection of the central nervous system by measles (rubeola) virus.

SSPE is a progressive and uniformly fatal degenerative disease of the central nervous system. It affects primarily children and adolescents; almost all patients are under 20 years of age. The rather classical course has been divided into three stages. The onset is usually gradual and the early stage is characterized by the insidious onset of intellectual deterioration, personality changes and mild motor disturbances. Myoclonic jerks with a characteristic electroencephalographic picture usually become apparent. In the middle state there is increasing intellectual deterioration, progressive hypokinesia, pyramidal and extrapyramidal symptomatology and mutism. The third stage is marked by profound dementia, decortication, cortical blindness and evidence of hypothalamic dysfunction. The cerebrospinal fluid is usually normal except that early there may be increased pressure, slight cellular pleocytosis and mild elevation of the protein content, chiefly the gamma globulin component. However, it usually produces a first zone Lange curve.

Electroencephalographic studies have indicated severe widespread involvement of the brain, especially in the later stages of the disease. Studies of the brain at autopsy have shown extensive involvement of both gray and white matter with eosinophilic in-

From the Department of Pediatrics and the Clinical Research Center, Children's Memorial Hospital, University of Oklahoma Medical Center, Oklahoma City, Oklahoma.



tranuclear inclusion bodies in both neurons and neuroglia. Associated with the presence of the inclusion bodies is a perivascular infiltration of lymphocytes and plasma cells and evidence of extensive neuronal destruction. Intracytoplasmic inclusion bodies have also been observed.

The average duration of the disease is nine months, although patients have died in as little as six weeks and an occasional one has survived up to ten years. Remissions are uncommon.

A virus cause of Dawson's encephalitis has long been suspected and the finding of intranuclear and intracytoplasmic inclusion bodies supports this view. Recently, considerable evidence has accumulated that a virus of the myxovirus group, to which measles (rubeola) belongs, may be the etiologic agent in Dawson's encephalitis or SSPE. Connolly and his co-workers in Ireland recently demonstrated measles virus antibody (rubeola) in the serum and spinal fluid of three patients with clinical pictures compatible with SSPE. A history of childhood infection with rubeola some ten to twelve years earlier was elicited in each. Rubeola virus antibody was elevated in the serum of two of the patients. In the third this titer increased sixteen fold during the course of the illness. One patient who had experienced rubeola several years earlier had been in intimate contact with a sibling with measles immediately before the occurrence of encephalitic signs. All three patients died and the necropsy findings were consistent with those seen in this disease. No virus was recovered from fecal specimens nor from spinal fluid obtained during life and none from necropsy specimens of the brain. However, type A inclusion bodies were observed in brain tissue. In two of the three patients, fluorescent antibody studies of brain tissue indicated that measles virus antigen, or that of a similar virus such as distemper (which has never been known to infect humans), was present in the brain of both patients. Fluorescent anti-measles antibody produced positive staining of cortical neurons.

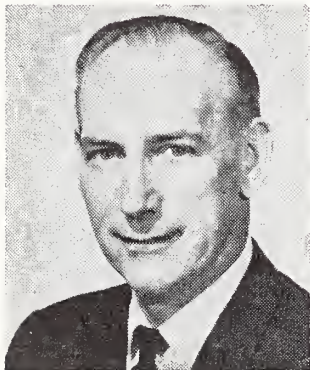
Further evidence of the association of a myxo-type of infectious agent with SSPE has been presented by Dayan and his associates. A young child with a characteristic clinical course which ended fatally at fifteen

months of age demonstrated a high titer of anti-measles antibody on several occasions during the clinical course. At necropsy the brain showed pathologic changes characteristic of SSPE with acidophilic intranuclear inclusion bodies. Electron microscopy of the brain tissue revealed that many of the affected cells contained virus-like particles with helical symmetry and the fine tubular structure characteristic of the myxoviruses or the so-called pseudomyxoviruses, such as canine distemper and rinderpest of cattle. The virus of measles has certain biologic properties in common with these agents. Additional evidence of a relationship to measles virus infection has now been obtained from several other laboratories and is based on four basic findings: frequently a history of previous measles infection; the presence of myxovirus-like particles in the cytoplasm of brain cells; the presence of measles antigens in brain cells demonstrated by labelled antibody techniques; and elevated cerebral spinal fluid and serum measles antibody levels.

An intriguing question relates to the discrepancy between the clinical and pathologic expression of measles encephalitis and SSPE. The former is an acute disorder which develops in close temporal proximity to acute rubeola whereas the latter has a latency varying usually from four to seventeen years after the exanthem. Is it possible that one and the same virus produces two ostensibly different diseases? Zeman and Kolar suggest that the difference may be more apparent than real pointing out that Adams demonstrated Cowdry type A inclusion bodies in the central nervous system of children who died years after the occurrence of measles encephalitis. Adams, *et al.*, contend that subclinical infection of the brain during the course of measles may be quite common. Webb and Smith, in discussing the relationship of the immune response to development of central nervous system lesions, suggest that it is not unreasonable to suppose that viruses may persist for months or years in an intracellular state. In addition to elevated antibody levels, the pathologic changes in the brain of a patient with SSPE have consistently shown perivascular infiltrates and other findings consistent with an immunologic reaction. Cer-

(Continued on page 525)





Until the advent of medicare, "extended care" was not in the lexicon of the health care field.

As enacted in the medicare law and modified by the implementing regulations through HEW, extended care emerges

as an extension of in-patient hospital care on a strata basis.

The point of great confusion understood poorly by many physicians and understood not at all by patients, is that extended care is *not* nursing home care or custodial care. Nursing home and custodial care are simply not included in the bonanza of "benefits" offered under the medicare law. (Title 18.)

There are some forty institutions in Oklahoma designated as extended care facilities. This implies that they have transfer agreements with acute general hospitals, have functioning utilization review committees, and provide continuous skilled services stratified from the acute general hospital.

Patients are admitted by transfer by their attending physician to follow a plan of treatment for the same "spell of illness" for which they were admitted to the hospital and not by reason of chronic or debilitating disease which pre-existed or is concurrent with the acute situation which required hospital admission.

The documentation of the skilled services, medical care, plan of treatment and progress must be sufficient to allow the intermediary to reimburse the facility for the prescribed and covered stay. If this information which allows the patient to qualify is missing, the intermediary simply cannot make payment. In fact, under the most recently stated government policy, social security has suggested that denial of benefits may be retroactive which would require restitution by the facility and the institution would then have to seek payment from some patients who have already been discharged.

Let us tell these people who pressure us for E.C.F. admission "so medicare will pay for it" the difference between extended care and "nursing home." □

Sincerely yours,

*Scott Henderson, M.D.*



# Intestinal Hemorrhagic Necrosis as A Complication of Digitalis Intoxication

JOSEPH L. CALDWELL, M.D.  
C. THOMAS THOMPSON, M.D.

*Digitalis intoxication has been suggested as one etiology of a syndrome, usually found in elderly patients, of irregularly distributed intestinal hemorrhagic necrosis.*

**H**EMORRHAGIC AND necrotic changes of the gastrointestinal tract in the absence of mesenteric vascular occlusion have been reported with increasing frequency during the past 15 years. Various hypotheses proposed in an attempt to uniformly explain the varied clinical findings in these patients have usually suggested a profound disturbance in the regional circulation of the mesenteric vascular bed as a result of a remote systemic disturbance such as myocardial infarction, burns, cardiac arrhythmias, congestive heart failure and shock states.<sup>1</sup> More recently, digitalis glycosides have been suggested as an etiologic factor in some cases.<sup>2</sup> The purpose of this article is to report a patient with intestinal hemorrhagic necrosis accompanying digitalis intoxication, to alert phy-

sicians to the clinical picture of this entity and to discuss the possible contributory role of digitalis in the production of this syndrome.

## CASE REPORT

(SFH 06-70-35)—A 59-year-old Caucasian housewife with previously diagnosed hypertensive cardiovascular disease and congestive heart failure was brought to the hospital complaining of nausea and abdominal pain. Several days before admission, she voluntarily increased her digitoxin dosage from 0.1 mg twice daily to 0.2 mg twice daily because of dyspnea. Twenty-four hours prior to admission she developed nausea, vomiting and mild abdominal pain. Her symptoms grew more severe and four hours before admission she passed bright red and dark purple blood rectally.

Initial physical examination revealed an acutely ill woman with a blood pressure of 160/100 in the left arm and pronounced pallor. Her extremities were cool and clammy with a mottled cyanosis of the thighs and she had poor nailbed capillary filling. The temperature was normal; the heart rate was 130/min. A gallop rhythm was present and the peripheral pulses were present but weak. The lungs were clear to auscultation except for a few left basilar rales. The ab-

From the Departments of Surgery, St. Francis Hospital and St. John's Hospital, Tulsa, Oklahoma.



domen was distended, tender in the left upper and epigastric regions and had greatly reduced or absent bowel sounds. Radiographs of the abdomen revealed a slight ileus. She passed a large bloody stool during the physical examination.

Initial laboratory data were: hemoglobin 14.6 gm/100 ml, hematocrit 50 per cent, white blood cell count 21,900/cu mm, blood urea nitrogen 36 mg/100 ml and a normal serum amylase. Urinalysis revealed four plus albumin, specific gravity of 1.023 and 20-25 red blood cells per high power field on microscopic examination. A single platelet count was reported as 19,000/cu mm, but simultaneous prothrombin, partial thromboplastin and coagulation times were normal. An electrocardiogram showed first degree atrio-ventricular block with runs of 2:1 atrio-ventricular block and digitalis intoxication.

After an initial diagnosis of mesenteric thrombosis, the patient was treated with large amounts of intravenous fluids and blood and taken to surgery. Upon opening the abdomen it was apparent that some type of vascular phenomenon was occurring within the bowel. The gut was pulseless, edematous and irregularly and sporadically involved with a dark red to purple cyanosis. The lesions had no relationship to the normal vascular supply. The duodenum appeared most discolored, but the distribution was sporadic and we chose to resect the bowel from mid-jejunum to mid-ileum with an end to end anastomosis. Despite postoperative treatment with vasopressor agents, steroids, antibiotics and digoxin, the patient expired in severe shock.

At autopsy the coronary arteries were widely patent. There was minimal atherosclerosis of the abdominal aorta and the orifices of the celiac and both mesenteric arteries were widely patent without evidence of thrombotic or embolic disease. There was extensive hemorrhage into the esophagus, stomach, colon and remaining jejunum. In most areas the hemorrhage involved only the superficial layers, but in portions of the colon and esophagus there was hemorrhage into the muscularis layer, and the remaining portions of the small bowel were entirely necrotic.

The majority of reported patients appear to have a similar clinical picture.<sup>2, 3, 4</sup> An elderly cardiac patient, usually 60 years or older with a history of congestive heart failure, develops nausea or abdominal pain. Cardiac arrhythmias suggestive of digitalis intoxication may develop. Abdominal pain, tenderness and distention becomes more prominent and severe, and then vomiting, diarrhea, melena or hematemesis may develop (table 1). The patient lapses into shock and expires within one to five days (an average of three days after the onset).

Examination during the onset of the attack suggests that surgical intervention is warranted and the most common clinical diagnosis is mesenteric infarction or thrombosis. There is leukocytosis and hypovolemia with hemoconcentration. If surgery is performed, the bowel is found to be dark red to purple in color with a patchy distribution of the pathology without regard for the normal vascular supply of the gut.<sup>2, 3</sup> The serosal side of the bowel may appear ischemic but viable, while the mucosal side is involved in necrosis that may involve the esophagus, stomach, small and large bowel. There may or may not be pulsations in the mesenteric vessels.

Microscopic examination of the gut reveals lesions varying from the absence of just the tips of the villi to complete loss of the mucosa.<sup>2, 4</sup> The muscularis layer is usually intact but it may be involved in severe cases. The most consistent pathological finding is severe dilatation and congestion of the submucosal veins.<sup>3</sup> Leukocytic infiltration

Table I  
Analysis of 42 Cases of Hemorrhagic Necrosis from  
Three Series (2, 3, 4).

ITEM	n=42	%
Male	21	50
Female	21	50
Aged 60 years or more	34	81
Aged 59 years or less	8	19
Diagnosed heart disease	38	91
Previous heart failure	34	81
Abdominal pain	30	71
Abdominal tenderness	24	57
Diarrhea	24	57
Abdominal distention	21	50
Vomiting	18	43
Melena	16	38
Hematemesis	10	24



is usually not pronounced in early cases but it may be present in severely affected gut.

#### DISCUSSION

Bowel ischemia is the direct etiologic factor leading to hemorrhagic necrosis, but there are multiple factors that appear to contribute to bowel ischemia.<sup>1</sup> The necrosis produced in the gut of the dog by irreversible hypovolemic shock is associated with unresponsiveness of the splanchnic vascular bed<sup>5</sup> and perhaps with the action of endogenous proteinases upon the mucosal cells.<sup>6</sup> Such necrosis, while histologically similar to the necrosis under consideration, cannot be the same, however, because shock in man does not uniformly produce intestinal necrosis.<sup>3</sup>

Myocardial infarction,<sup>7</sup> aortic insufficiency,<sup>8</sup> cardiac arrhythmias<sup>1</sup> and severe congestive heart failure<sup>9</sup> have all been described as a cause of hemorrhagic necrosis of the gastrointestinal tract in man. Such necrosis has been attributed to a rapid or profound decrease in effective cardiac output in patients who may have a mesenteric blood flow already compromised by arteriosclerosis.

In contrast to these cases, however, are those patients who cannot be shown to have a pathological lesion resulting in profoundly reduced cardiac output and yet who die of mesenteric vascular insufficiency without vascular occlusion. Most if not all of these patients in early reports received large amounts of digitalis, and the "preponderance of recognized and unrecognized signs and symptoms of digitalis intolerance . . . was striking."<sup>3</sup> In the 20 patients forming the original report of this entity, Wilson and Qualheim<sup>2</sup> noted that the "temporal relationship to vigorous therapy for heart failure with digitalis . . . is striking in many instances."

---

*Joseph L. Caldwell, M.D., graduated from the University of Arkansas School of Medicine in 1966 and is currently serving as an Air Force physician stationed in Vietnam.*

*A 1948 graduate of Harvard Medical School, C. Thomas Thompson, M.D., has been certified by the American Board of Surgery. He is a member of the American College of Surgeons, the Ochsner Surgical Society, the Southwestern Surgical Society and the Oklahoma Surgical Association.*

The cardiac arrhythmias that can be produced by digitalis intoxication have been shown by Corday, *et al.*,<sup>1</sup> to decrease cardiac output and produce angiospasm of the gastrointestinal vascular system by a "compensatory homeostatic mechanism." Digitalis can directly cause contraction of vascular smooth muscle and a peripheral vascular effect has been suggested for some time.<sup>10</sup> Ferrer, *et al.*,<sup>10</sup> have demonstrated that intravenous injections of digoxin in patients with ventricular failure produces a uniform response in which both splanchnic blood flow and blood volume decreases in most subjects, demonstrating important vasomotor activity in the hemodynamics of the splanchnic vascular bed.

Thus, digitalis intoxication in a patient with a mesenteric vascular system already partially compromised by arteriosclerosis could result in a greatly decreased splanchnic blood flow by three mechanisms: 1) the production of cardiac arrhythmias that would decrease effective cardiac output, 2) mesenteric angiospasm resulting from the "homeostatic mechanism" described by Ferrer, *et al.*<sup>10</sup> and 3) angiospasm resulting from the direct pharmacologic effects of digitalis glycosides on the smooth muscle of the splanchnic vascular bed.

If this concept of origin of splanchnic ischemia is correct, then it would be expected that if the condition were diagnosed before severe ischemic damage, then treatment should be directed to reducing vasospasm and increasing cardiac output. Reports of early attempts at reversing of mesenteric angiospasm are few but could have important implications for therapy.<sup>3, 11</sup>

#### TREATMENT

Early recognition of the syndrome appears to represent the primary consideration in therapy.<sup>3, 12</sup> This is in spite of the fact that some authors feel that early diagnosis and effective treatment is improbable, if not impossible.<sup>13</sup> Muggia<sup>3</sup> recommends replacement of fluid and electrolyte deficits, especially potassium deficiencies that could potentiate the effects of digitalis. Steroids, antibiotics and heparin have been suggested, but it is not clear if they alter the recovery rate,<sup>3, 11, 12</sup> although certainly the administration of antibiotics can be supported by the



knowledge that bacteria cross the mucosal barrier in systemic shock. Vasopressor agents used to combat the late shock have been suggested to increase splanchnic vasoconstriction and thereby increase the ischemia.<sup>11</sup> Isoproterenol, a beta adrenergic stimulating agent, and phenoxybenzamine, an alpha adrenergic blocking agent have been suggested as a means of decreasing the splanchnic vasoconstriction and increasing blood flow.<sup>11</sup> Blocking of the splanchnic nerves and celiac ganglion by direct chemical means also has been suggested by the same authors. With splanchnic blood flow improved, then vasopressor agents could be used to improve peripheral blood flow. These treatment regimens have only recently been suggested, however, and there is little experience with their use in clinical situations. Certainly their suggestion indicates more reason for hope in this syndrome than has been present in the past.

#### SUMMARY

Nonocclusive mesenteric infarctions are being reported in increasing numbers. Digitalis intoxication has been implicated in some cases. A patient with hemorrhagic necrosis of the bowel and digitalis intoxication is reported. The clinical features of abdominal pain, nausea, vomiting and varying

amounts of gastrointestinal bleeding, in association with digitalis intolerance, suggests the syndrome. Mesenteric angiospasm in the presence of reduced cardiac output has been suggested as one of the mechanisms of infarction. Treatment is directed towards reducing splanchnic vasospasm and includes fluid and electrolyte correction, general sympathetic blocking agents and direct chemical blocks of ganglions. The prognosis, while improved, continues to be poor. □

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# Facial Disfigurement — An Analysis

DENNIS ALLEN WEIGAND, M.D.  
MARK ALLEN EVERETT, M.D.

*Management of facial disfigurement, traditionally considered a surgical problem, must be broadened in scope and approach. A more inclusive view, with emphasis on pathophysiology, is briefly presented.*

BECAUSE TREATMENT of facial disfigurement has been traditionally the province of plastic surgery, there has been a tendency to limit the concept of "facial disfigurement" to those diseases amenable to surgical management. Certain causes of disfigurement have captured the interest of dermatologists more than of surgeons. Chief among these are hemangiomas, actinic degeneration and aging. An analysis necessarily must deal with the several causes of facial disfigurement, since investigations for the most part have been pursued separately. In spite of diversity there was some aspects of general importance.

In a conference entitled "Facial Disfigurement: A Rehabilitation Problem" from the Institute of Reconstructive Plastic Surgery, New York University Medical Center in March, 1963, facial disfigurement was categorized as follows: (1) congenital and con-

genitally determined malformations; (2) accidental injuries; and (3) disfigurement consequent to eradication of malignancies.<sup>17</sup> This classification comprises only those conditions which are only *surgically managed* and thus is far from comprehensive. Important categories not included are: (4) aging; (5) actinic degeneration; (6) disfiguring scars; (7) keloids. Surgical management is less satisfactory in treating these conditions, which are so common. Their control may be achieved only by better understanding of causes and by preventing progression to permanent disfigurement. Thus a classification based upon accessibility to surgical management excludes important causes of facial disfigurement, and limits the possibilities of a unified cause-oriented attack on the problem.

## BACKGROUND

The victims of facial disfigurement are no less diverse than the causes. Newborns, adolescents, manual laborers, and elderly people—all have a significant chance of suffering facial disfigurement at some time. *Cleft lip* occurs in about one out of every 1,000 live births.<sup>6</sup> *Hemangiomas*, many of which are facial, occur in about one-third of all infants.<sup>13</sup> Types of hemangiomas included are *nevus telangiectaticus* (port-wine stain and salmon patch), *nevus vasculosus* (strawberry hemangioma), and *hemangioma cavernosum*. *Keloids* account for about 0.4



per cent of American dermatologic patients.<sup>19</sup> The cutaneous effects of *aging* are inevitable for all who live long enough, and for many these visible changes are a definite handicap. *Actinic degeneration* is likewise very common and may begin at a relatively early age.

In a society that places a premium on physical beauty and youth the psychologic and socioeconomic toll of facial disfigurement needs little explanation. There is an undeniable tendency to withdraw from someone whose face is unattractive. Persons with even minimal disfigurement are prompted to seek help more from a feeling of rejection than from vanity.<sup>17</sup>

Research programs, foundations, treatment centers, etc., exist for most general medical problems of major importance, but there are none which specifically emphasize facial disfigurement or birthmarks. At New York University efforts by various departments are coordinated, but there is no established division of facial disfigurement *per se*.

#### SPECIFIC PROBLEMS

##### *Hemangiomas*

*Nevus telangiectaticus* is usually considered as a hamartoma of mature capillary elements. The salmon patch is the more common of the two types and usually disappears spontaneously, especially if not located in the midline. The port-wine stain is darker, larger, and seldom if ever regresses spontaneously. Rather it tends to accentuate with age. These lesions are of great cosmetic concern. The histology of the two clinical types is said to be essentially the same.

Although *nevus vasculosus* and *hemangioma cavernosum* usually regress spontaneously, objectionable scars are a frequent residual. The question of when and how to treat them often arises because of pre-involution growth, encroachment on vital structures, ulceration and parental anxiety.

Most studies on hemangiomas are limited to methods of ablation or camouflage.<sup>18, 2, 7</sup> For many years embryologists have thought that *nevus telangiectaticus* may represent failure of obliteration of certain vessels in the normal process of fetal vascular remodeling. Since these lesions are usually isolated

and sporadic in appearance,<sup>1</sup> genetic factors have not been implicated. Animal studies of hemangiomas are virtually nonexistent.

Investigation of these lesions might begin with a detailed light and electron microscopic study of all clinical types before, during, and after regression. Apparently it has never been determined whether the vessels in hemangiomas react normally to vasoactive amines and hormones. A knowledge of their physiologic responses should help determine whether port-wine stains are truly neoplastic or simply localized telangiectatic areas.<sup>9</sup> Results of these studies could direct further investigation of the disease. It should be determined if the salmon patch (which regresses) and the port-wine stain (which does not) are really similar microscopically. Regarding influence by hormones, several observations are interesting. Lymphangioma circumscriptum, for example, often regresses at puberty. A recent study<sup>20</sup> reported pronounced regression of cavernous hemangiomas in children given systemic corticosteroids. There are several reports of enlargement of hemangiomas during pregnancy, and regression thereafter. Cavernous hemangiomas occur in dogs and other domestic animals but seldom receive much thought unless there is associated visceral involvement. Hemangiomas can be induced quite readily in white Pekin ducks with topical methylcholanthrene.<sup>14</sup> Thus an excellent experimental model exists for studying these tumors in depth.

##### *Aging*

Aging of the skin and subcutaneous tissue is not usually regarded as a medical problem. However, to those whose faces wrinkle and sag long before they are "aged" in terms of productivity and outlook, these alterations cause great concern. With continued prolongation of life expectancy the magnitude of aging as a cutaneous problem will increase.

Observations on aging have evoked few critical scientific observations. However, recent symposia, monographs, and workshop proceedings reflect some interest in the cutaneous aspects.<sup>3, 10, 12</sup> Investigation of aged skin has dealt almost entirely with dermal components. Much has been learned about biochemical and biophysical changes in the



dermis, but relatively little can be related directly to the appearance of the aging face, much less the appearance of aged, protected skin. It has been proposed that aging results from the cumulative effects of radiant energy.<sup>15</sup> This theory proposes that radiant energy enters cells, striking polyunsaturated lipids, and dislodges hydrogen atoms. Peroxidation of the lipids then occurs with formation of free radicals. The latter collide with and damage lysosomes, resulting in lysis of the cell. Thus the host ages cell by cell. Sufficient amounts of the antioxidants, vitamins C and E, can prevent lipid peroxidation and subsequent damage. It is suggested that increased dietary vitamins C and E may protect the skin against this excessive oxidation.

Wrinkles, the most obvious change in an aging face, are mainly related to the loss of subcutaneous fat and to dermal attachment to underlying muscles.<sup>5</sup> Kligman has shown that high topical concentrations of androgenic and progestational hormones will reverse the histologic changes of aging in axillary skin.<sup>12</sup> The effects of these hormones on subcutaneous fat are known only in a very general way.

The presently available methods for managing wrinkles (rhytidectomy, chemosurgery) are of limited value since they usually must be repeated within a few years.

Research on aging skin must be directed at the causes of wrinkling and sagging. Although the loss of facial subcutaneous fat is a major factor, variations in susceptibility to this phenomenon remain unexplained. For example, Negroes develop much less wrinkling with age than do caucasians. Is this accountable by a difference in subcutaneous fat? If so, is this difference a racial characteristic, or is it related to a lack of actinic damage or something else? The amount of manpower and facilities involved in the work on aging is considerable, but the scope has lacked some breadth as evidenced by the deficiencies in knowledge mentioned above.

### *Congenital Defects*

The major specific problem in this group is cleft lip. Other facial defects occur, but much less often, and many times in persons with more serious defects which take

precedence over cosmetic considerations. Although surgical correction usually gives a satisfactory functional result, there are frequently accompanying orthodontic and speech problems which require long term treatment. Facial congenital defects, particularly cleft lip, have been studied extensively in terms of refinements in surgical technique.

More recently, increasing attention has been given to the embryological mechanisms of their formation. A workshop on the "Oral-Facial Growth and Development Program, Extramural Programs, National Institute of Dental Research," was convened to consolidate information from a number of investigators and hopefully to help orient further research on cleft lip and cleft palate. The primordial palate-lip area is one of considerable close traffic among numerous embryonic processes, all of which are subject to dyschrony in movement and faulty spatial relationships. Experimental induction of clefts in rats with various teratogenic drugs has prompted interest in the pursuit of possible environmental influences as well as genetic determinants. Further, interest was expressed in attempts to promote earlier closure of palatine shelves.<sup>4</sup>

Numerous centers and foundations deal partly or entirely with clefts and other burdensome congenital disfigurements. There is apparently an excellent diversity of specialists who are interested in these diseases, including plastic surgeons, oral surgeons,

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otolaryngologists and embryologists. Considerable attention is also given this problem by those in the rehabilitation field.

### Scars and Keloids

The majority of disfiguring facial scars follow either cancer therapy or trauma. Since for the most part it is not possible to prevent scars, attempts must be made to minimize scar formation beyond what is necessary for wound closure. More directly a problem of disfigurement is the keloid, which is basically an abnormal response to a wound.

Scarring and keloid formation must be considered an extension of wound healing. However, in spite of the widespread interest and excellent work in wound healing, the events that follow wound closure have not been studied adequately. Surgical revision of unsightly facial scars gives fairly good results in many cases. One of the few studies on keloid formation<sup>10</sup> indicates that there is a persistence of fibroplasia and fibrosis beyond the normal time period and in a perivascular, nodular pattern. Basically it appears that the fault is not so much qualitative as quantitative. The factors which cause a normal scar to stop proliferating and begin maturing, apparently function too late or not at all. In addition to a primary or secondary malfunction of fibroblasts, there is evidence that wound tension and orientation of the substratum of the fibroblasts will influence their direction and activity.<sup>8</sup>

Post-irradiation scarring has been treated by implanting full thickness punch grafts of normal skin with resulting improvement in the mobility, texture, and appearance of the scar.<sup>11</sup> The cosmetic efficacy of this procedure should be investigated further. Thus, a foundation for studying disfiguring scars and keloids has been laid, and further investigation should be a natural continuation of the endeavors to learn more about wound healing.

### SUMMARY

The traditional surgical approach to the study of facial disfigurement has tended to exclude several important cosmetic problems from consideration. Among these are aging

and actinic degeneration. Other problems have not received sufficient attention with regard to their role in disfigurement. These include the several types of hemangiomas and scars. There is a definite lack of coordinated investigative and therapeutic work on facial disfigurement, and only such problems as cleft lip have been dealt with extensively.

No active research on hemangiomas is being pursued and there is very little on the disfiguring aspects of aging and actinic degeneration. Research on wound healing should be extended to include disfiguring scars and keloids.

It may be argued that functional results in correction of deformities are sufficient: the repaired cleft lip and palate allow the infant to feed, hemangiomas while unsightly seldom become malignant, and most facial cancers are curable even if large. Nevertheless, cosmetic considerations have become so important that it is no longer possible to separate functional from cosmetic results clearly. They are to a great measure the same. □

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# Trauma

JOHN A. SCHILLING, M.D.

*Today, trauma ranks first in this country in loss of life years through death and disability to age 65. It is a preventable and treatable disease.*

*The forces involved need to be understood to minimize or prevent injury.*

**T**RAUMA, which is defined as bodily injury, comprises one of the "big five" groups of disease entities. These entities may be listed as: 1) traumatic, 2) congenital, 3) inflammatory, 4) neoplastic, and 5) metabolic. In the United States, trauma is *fourth* in the causes of death at all ages. It is *first* among causes of loss of productive life years up to the age of 65 and ranks two to one over heart disease.<sup>1</sup> The annual dollar cost of trauma is conservatively estimated at 2.5 per cent of our gross national product, or approximately the cost of the Vietnam war during 1966.<sup>2</sup>

Twentieth century civilized man is characterized by his ability to employ mechanical, chemical, electrical and atomic energy for his personal and social needs, creatively as well as destructively. We live in an era of increasing energy, speed, and force which, simply stated, is rapidly becoming a public health menace of greater magnitude than bacteria, neoplasm, or cardiovascular disease.

A MEND lecture in Emergency Medicine at The University of Oklahoma School of Medicine.

Primarily, it involves normal, self-sustaining individuals and, in retrospect, the majority of accidents, or trauma, could have been prevented.

If thermal or chemical injury is excluded, trauma is caused almost invariably by a force which is decelerated by the human body, or where the moving human body or one of its parts is decelerated against a relatively stationary object. A few simple equations have been employed to quantitate this force:

1. Energy of a moving body = mass  $\times$  acceleration (velocity squared).

2. Deceleration = the square of the velocity divided by two times the stopping distance:

$$A = \frac{V^2}{2S}$$

3. Stopping distance = one-half the rate of deceleration times the square of the time:

$$S = \frac{1}{2} a T^2$$

4. At the earth's surface, gravity will cause an acceleration of 32 feet per second in a freely falling body. One "G" force can be defined as that force which will produce a similar acceleration or deceleration in a freely moving body.

Anything that decreases the mass or the velocity of a moving body, or increases the distance or the time of its deceleration, reduces its energy on impact. Furthermore, it should be emphasized that mass and distance have arithmetic relationships to force and energy, whereas velocity and time are squared and have geometric relationships.



For example, a properly belted occupant in an automobile that is moving at the rate of 60 miles per hour and that strikes a stone wall and decelerates in four feet (a reasonable assumption if crumpling is uniform) would be decelerated by a force of 30 G's:

$$d = \frac{V^2}{2S} = \frac{(88 \text{ ft./sec.})^2}{2 \times 4} = \frac{7744 \text{ ft./sec.}^2}{8} = 968$$

$$= \frac{968 \text{ ft./sec.}^2}{32 \text{ ft./sec.}^2} = 30 \text{ G's.}$$

On the other hand, an unbelted, freely moving occupant in an automobile that is traveling at the rate of 30 miles per hour and strikes a stone wall could sustain 302 G's on the reasonable assumption that the occupant's head strikes an unyielding column. The decelerating distance is now one inch, or approximately one-tenth of a foot, and this distance represents the crumpling distance of the skull:

$$\frac{(44 \text{ ft./sec.})^2}{2 \times 0.1} = \frac{1936 \text{ ft./sec.}^2}{0.2} = 9680$$

Some years ago, Colonel John P. Stapp personally demonstrated that the human body, stabilized in a forward facing position with shoulder and waist harness, could tolerate 35 G's for a few seconds during a relatively smooth deceleration. Thus, in the first example, the occupant of the automobile, if properly belted, could walk away from the accident, but in the second example the occupant, if unbelted, would be transported to the morgue.

The mechanism of bodily injury by deceleration force may be one, or a combination of three mechanisms: movement of blood in vascular compartments, movement of extracellular and intracellular water and cell disruption.<sup>3</sup> An example of the first mechanism would be a pilot who blacks out for a few seconds as he is pulling out of a power dive from a caudal force of 10 G's that moves blood away from his brain and causes cerebral anoxia. On the other hand, a similar force directed cephalad might cause a "red out" from blood being pushed into a fixed cranium which results in vascular rupture, intracranial hemorrhage, and death.

Extracellular or intracellular fluid may be displaced by a force of lesser magnitude but

over a longer period of time than that which moves blood in vascular compartments. A familiar example is the pitting of edema fluid under finger pressure. Pressure necrosis under a plaster cast is a typical clinical example. In fact, any force that exceeds capillary pressure (30 mg. Hg.) for an indefinite period is capable of causing pressure necrosis.

The third mechanism of cell disruption obviously varies in different types of tissues, such as bone or tendon on the one hand, to lung alveoli or liver on the other. The cell wall strengths of different tissues have not been well quantitated. For example, a high velocity bullet imparts energy roughly proportional to its mass times the square of its velocity times the striking surface area. On striking soft tissue, part of the energy is imparted to the tissue within a fraction of a millisecond, first as a compression wave followed by a vacuum or decompression wave. This phenomenon explains the gaping wounds of exit. Bullet and bone fragments may behave as secondary missiles.

Soft tissue reacts somewhat like firm gelatin and the tissue disruption and necrosis involve a much greater area and volume than just the bullet track. Appreciation of this area of necrosis is important in the exploration and debridement of bullet wounds. A stab wound, on the other hand, is a low velocity, low energy accident and the lesser force is applied to a very small surface area.

Athletic injuries and contusions are also low velocity accidents. A moving body is decelerated against another or over a fixed extremity with sufficient force to produce rupture of supporting ligaments or bones, or to produce intracranial, intrathoracic, or intra-abdominal decelerative or contusive injury.

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From these observations the main principles of preventing athletic injuries have evolved. They are conditioning, strengthening, and taping of supporting structures, and increasing the area of application of force by helmets or shoulder pads. Inasmuch as certain structures have a greater range of motion in one direction than another, there is a greater deceleration distance in the direction of the greatest range of motion with less chance of injury. For example, greater damage can be produced at the elbow by hyperextension than by flexion.

Seven primary factors influence the nature of decelerative injury. They are: 1) mass, 2) velocity or acceleration, 3) stopping distance, 4) time of deceleration, 5) area of application of force, 6) direction of force and 7) specific tissue. Anything that decreases the mass or velocity, or increases the stopping distance, time of deceleration or area of application of force, decreases the likelihood of bodily injury.

Bodily injury is almost invariably accompanied by some or all of the following physiologic responses and mechanisms:

1. Neuroendocrine stress response.
2. Varying degrees of contamination and sepsis.
3. Loss of specific organ function.
4. Hemorrhage and shock.
5. Starvation.
6. Acidosis.
7. Secondary loss of renal function with oliguria or anuria and uremia.
8. The local healing response of inflammation, epithelial proliferation, fibrocollagenous proliferation, regeneration, and contracture.<sup>4</sup>

Other complications may occur in the actual management of the injured patient such as the systemic effects of anesthetic agents, drugs, and narcotics that depress the central nervous system. Furthermore, surgery itself is in a way controlled trauma by a gentle decelerative force applied to a small area by a knife edge which discreetly disrupts cellular membranes.

The management of trauma demands prompt transport of an injured patient to a definitive care area. Supportive therapy, especially resuscitation, demands the establishment of an airway with control of blood

loss. The hemodynamics demand appropriate volume replacement by blood, plasma, electrolytes and water. Accurate diagnosis of the extent of injury is essential for recovery. Monitoring physiological and biochemical bodily functions will permit support of the cardiopulmonary and renal function and the correlation of acidosis.

Definitive surgical care demands debridement with anatomical reconstruction and repair of damaged structures. Physiological reconstruction of altered organ function may be necessary, e.g., chest catheter or extracorporeal renal dialysis. Approximated structures must be splinted and structurally aligned. Finally, there must be nutritional repletion and rehabilitation.

To care for an injured patient properly, it is imperative that excellent laboratory, radiologic, blood bank, operating room, intensive care, and rehabilitative facilities be available. They must be directed and utilized by trained surgeons and related medical and paramedical personnel.

#### CONCLUSION

We live in a world of force. It is worthwhile to have some concept of the magnitude and variety of these forces. Trauma is one of our major health hazards. Prevention of trauma is more productive than treatment, but this ideal can never be achieved totally. Specific attention must be given to planning for transport of the injured, triage, resuscitation, definitive care and rehabilitation. This involves area and community planning of facilities and personnel. Integration of the facets of prevention and treatment could reduce the morbidity and mortality of trauma by 50 per cent. Thus, thousands of productive lives, as well as hundreds of millions of dollars, could be saved in Oklahoma. □

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# Burkitt's Lymphoma

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**ALTHOUGH THIS** tumor has been present in Africa for a number of years, it has only recently been named in honor of Doctor Denis Burkitt, a British surgeon, in tribute to his astute observations and his description of its unique features.

In 1958, Burkitt<sup>1</sup> described 38 cases of a malignant tumor of the jaw in African children and on the basis of statistical survey, concluded that this tumor was the most common malignancy of childhood in Uganda, Africa. He noted the frequent occurrence of multiple abdominal tumors in association with the jaw neoplasms and subsequently identified both manifestations as being part of a single tumor syndrome. He did not allude to the geographic distribution at that time, but his interest was aroused as correspondence from other areas in Africa indicated that this unusual tumor was unknown in some parts of the continent. He embarked on a number of "tumor safaris" to determine the geographic limits of the tumor. He concluded that the tumor existed in a "belt" across Africa in areas where the

mean temperature never drops below 60° F. in the coldest season of the year and where the annual rainfall is in excess of 20 inches. The amount of rainfall was considered to be a factor in that it determines the amount of vegetation present. These two factors were then considered in relation to the presence of certain mosquito vectors; and the possibility of an arthropod-borne virus being the etiologic agent was first advanced.<sup>2-4</sup>

Dalldorff<sup>5</sup> suggested, on the basis of his review of 130 lymphomas in Kenya, that the Burkitt tumor is a modified form of acute lymphoblastic leukemia and that the etiologic agents involved in the two forms of disease might be the same on the North American and African continents. He based these observations on the fact that African children have an almost complete absence of acute lymphoblastic leukemia, while this is the most common malignancy of American children. Conversely, only rarely are American children afflicted with a lymphoma of nonleukemic form. The relative incidence of leukemia in the United States and of lymphoma in Africa is approximately the same. He cited a difference in the natural history of the two diseases—that of the age incidence. Acute leukemia in the United States has its peak incidence at age four; the African lymphoma's peak incidence is at age six.

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## INCIDENCE AND DISTRIBUTION

In Uganda, more than 200 cases of the tumor have been reported by Burkitt<sup>2</sup> over an eight year period, constituting slightly more than 50 per cent of all childhood malignancies. A similar incidence has been reported by Edington and Maclean<sup>6</sup> for Ibadan, Western Nigeria. Dalldorff,<sup>5</sup> in reviewing 309 cases of childhood malignancies in Kenya, as reported over a five-year period, found just under 50 per cent of them to be lymphomas with a much smaller incidence of jaw involvement than Burkitt's series.

The tumor appears to affect each sex equally and is rare before age two years and after 14. The peak incidence is around six years of age although this has varied slightly in different series.<sup>5</sup>

The disease is not restricted to African children, as cases have occurred in Indian and British children reared in Africa.<sup>2, 4</sup> Also, eight cases histologically similar to Burkitt's tumor but lacking several of the characteristic clinical features, have recently been reported from Canada.<sup>7</sup> It has also been reported from New Guinea, India, Brazil, Colombia, England and occasionally in the United States.<sup>18</sup> The case reports from Canada in particular would seem to refute the theory that Burkitt's tumor is climatically dependent because of an insect vector. However, there has been much confusion regarding the histologic classification of this tumor and a decision regarding the definitive diagnosis should be based more on the overall clinical picture than on microscopic appearance alone. The Canadian tumors differ clinically in two important features from Burkitt's tumor, namely in the lack of destructive osteolytic lesions and in the implied frequency of development of leukemia. Further investigation is probably indicated before one could conclusively say that the tumors are identical.

## CLINICAL FEATURES

Burkitt's tumor is considered to be a tumor of multicentric origin because there is widespread simultaneous invasion of many organs and involvement is never restricted to a single tissue. The rarity of deposits of tumor in the lungs weighs against blood-borne metastasis. The tumor can occur in

any organ system. The most characteristic presentation is with massive jaw enlargement, frequently involving more than one quadrant and occasionally all four quadrants. Maxillary involvement often causes the presentation to be that of exophthalmos and chemosis although the eye itself is not involved until the terminal stage of disease. In addition to the jaw, the tumor is also found in one or more of the following sites: kidneys, gonads, adrenals, liver, thyroid, salivary glands, heart, intestine, long bones and extradural space in the spinal canal. Massive bilateral infiltration of paired abdominal viscera is characteristic of this disease, with the ovaries and kidneys often becoming large enough to produce a markedly protuberant abdomen. Because ovarian involvement is so rare with other lymphomata, this feature when combined with jaw involvement is considered pathognomonic of Burkitt's lymphoma.<sup>8</sup>

Superficial lymph node and splenic involvement have a low incidence in this tumor, but there is a high incidence of mediastinal and abdominal node involvement. Extranodal deposits of tumor seem to be the major sites of tumor focus, both in Burkitt's tumor and the childhood lymphomas reported from the United States.<sup>9</sup>

It was formerly thought that leukemia does not occur in this syndrome, but several recent case reports of leukemia in Burkitt's lymphoma<sup>7, 10</sup> have invalidated this concept. Leukemia probably occurs only as a terminal or near terminal event, although when it occurs, it is of the acute lymphoblastic type.<sup>10</sup>

## TREATMENT

Before the systemic nature of Burkitt's lymphoma was recognized and a significant number of case reports accumulated, it was the practice to employ radical surgery for tumors of the jaw. Radiotherapy has been unavailable in Africa but numerous chemotherapeutic agents have been used with varying degrees of success.

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Nitrogen mustard, the first agent employed, is useful in giving temporary regressions of massive tumors. The regressions, however, are short lived. Similar results are obtained with cyclophosphamide and actinomycin D.<sup>11</sup>

Methotrexate is given by external carotid infusion to patients with large tumors of the jaw, and regressions of significant degree without systemic toxicity are observed within two weeks. There is no general clinical improvement, however, and the patients soon die of generalized disease. Intermittent oral methotrexate is the most satisfactory method of drug administration and with it the best results are obtained in the treatment of this neoplasm. Two patients with small lesions of the jaw prior to treatment have been maintained symptom free for 18 months. Very large tumors require toxic doses of the drug in order to achieve even short periods of regression.<sup>12</sup>

No form of treatment attempted has as yet met with profound success in altering the rapid course of this very malignant tumor. Most children expire within six months of the onset of symptoms.

#### INVESTIGATION OF ETIOLOGY

The peculiar features of this tumor syndrome have aroused much interest among oncologists and virologists, and research is progressing at a rapid rate. Numerous tumor sections have been examined with the electron microscope, but thus far the only viral particles seen are assumed to have only a "passenger" role, not an etiologic one.<sup>13</sup>

Cytogenetic studies reveal that some tumors of the Burkitt type are associated with chromosomal abnormalities, while others are not. In those cells with aberrations, the number two chromosome is most frequently altered. Only one small series of cases has been reported in regard to these aberrations, however, and no definite conclusion can be reached pertaining to the relationship of chromosomal aberrations to a viral etiology at this time.<sup>14</sup>

Virus isolation experiments have been attempted using tumor cells, and a number of agents have been isolated. One of the most significant successes is the isolation of a

reovirus from one patient with Burkitt's lymphoma. Of even greater importance is the demonstration of elevated antibody titers against the virus in 21 of 26 other patients with this lymphoma, while control cases showed a comparable titer in only 20 per cent.<sup>15</sup>

Unidentified filtrable agents have been isolated from six other patients and inoculated into experimental animals without tumors developing. Monkeys given intramuscular inoculations of these agents develop appreciable titers of neutralizing antibody against the agents after 14 days.<sup>16</sup>

The most significant development concerning the etiology of this tumor was revealed in August, 1964. Supernatant fluid obtained from a suspension of tumor material was injected intraperitoneally into three suckling monkeys. After two years in a controlled environment, two of the monkeys developed tumors of the long bones of the limbs. These tumors were histologically similar to Burkitt's lymphoma but were localized and did not have the generalized involvement so characteristic in humans. A further point of interest is the incubation period and the age of the monkeys when the tumors developed. The two year incubation period placed the monkeys nearly half the way to puberty, which occurs at about five years of age in these animals. The lymphoma syndrome reaches its peak incidence in children who are approximately one-half pubertal age. It has been concluded that the cancerous lesions could not have occurred with this incidence in the monkeys by chance alone; that the lesions are distinguishable from other pathologic conditions affecting bone; and that, under the conditions of the experiment, cell transfer could not have occurred. The findings indicate that, for the first time, a form of human malignancy has been transmitted by an infectious agent.<sup>17</sup>

#### COMMENT

The ever increasing number of viruses known to produce malignancy in other mammals has prompted researchers to seek proof of a similar virus-host response in humans. To date, this relationship has not been definitely demonstrated. Many malignancies are not unique for the human species, however, and it is thus conceivable that, if virus-in-



duced malignant transformation is demonstrable in other mammals, eventually a virus possessing this potential will be discovered in man. The evidence presented to date is most convincing that the etiologic agent in Burkitt's lymphoma is a transmissible one. It will be interesting to note the further elucidation of epidemiologic factors to determine if the results of the transmission experiment reported here are consistently reproducible.

This paper summarizes investigation that originated with the description of a unique tumor syndrome and has now progressed to the transmission, for the first time, of a form of human malignancy across the species barrier. □

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## CALL TO REMODEL EXECUTIVE BRANCH

The National Federation of Independent Business is supporting another "Hoover Commission" to revamp the executive branch of our Federal government.

N.F.I.B. endorses a move, led by Senator James B. Pearson of Kansas, for a bipartisan ten-man commission to effect the reorganization plan. Pearson's program is patterned after the Hoover Commission's reports of 1947-49 and 1953-55.

"Since the last Hoover Commission, Federal spending has almost doubled, and the number of Federal civilian employees has increased by nearly 20 per cent," Senator Pearson said.

His concern was supported by Senator Abraham Ribicoff, who observed that eight cabinet departments and 12 agencies are involved in health; 18 departments and four agencies operate loan programs; ten agencies in three departments are involved in education.

An objective of the commission would be to achieve economies and streamline the Federal organization.

Two members of the commission would be presidential appointees, and the Senate and House would name four each. □



## Functional Heart Murmurs

WEBB M. THOMPSON, Jr., M.D.

Heart murmurs are the result of turbulence developing in rapidly flowing blood.<sup>1</sup> The flow of blood in virtually all vascular channels is silent because of laminar flow, conditions producing turbulence can be expressed as a function of several variables and is related directly to the radius of the channel, linear velocity of flow, density of the fluid, and inversely to the viscosity. This relationship is the so called Reynold's number as is expressed as  $RVD/v = \text{Reynold's number}$ . If the Reynold's number exceeds a value of 970 then turbulence will be present. Since density, viscosity, and vessel diameter are relatively constant, the major determination of turbulence will be linear flow velocity. Blood flow occurs most rapidly in the largest arterial channels, thus at the aorta and pulmonary roots. According to Prec *et al*<sup>2</sup> the only place in the normal circulation that the critical value of Reynold's number is exceeded at the pulmonary and aortic roots during the rapid ejection phase of ventricular systoles. Turbulence also tends to occur when the caliber of a vessel changes abruptly. In such circumstances, turbulence will occur at a lower velocity than in a vessel of constant bore. These changes are shown diagrammatically in figure 1. With these hemodynamic factors in mind, the origin and factors concerned with murmurs in general and with functional murmurs specifically, can be discussed.

The presence of cardiac murmurs is frequently indicative of structural heart disease but not invariably. Functional, innocent, or nonsignificant murmurs make up the majority of murmurs detectible in patients, particularly in children and are, as the term implies, not indicative of significant cardiac disease. Logically, then murmurs must be considered as part of the overall evaluation

of patients and the decision as to significant and nonsignificant only after thorough evaluation. Modern techniques of physiologic evaluation have made identification of the cause of cardiac murmurs possible. From a practical viewpoint, it is not possible to apply these tools of diagnosis to all patients with murmurs. Data accumulated in the past permits a more accurate interpretation of auscultatory phenomena without elaborate investigation.

Vibrations during the early ejection phase of ventricular systole can be recorded in virtually all individuals though these may not be detected on auscultation. The commonest of the so called functional murmurs are caused by this fact. They are more easily heard in those with thin chest walls and thus most often noted in children. They originate in the outflow tract of the right ventricle and pulmonary valve areas, rather than the aortic area. The reasons for this include the close anatomic relationship of this area to the anterior chest wall and to some narrowing of the outflow tract area due to slight bulging of the membranous septum from the left to right during ventricular systole. The murmur produced is an early, vibratory, short systolic murmur, with a musical character best heard over the left base. This murmur will be accentuated by anything causing an increased cardiac output (*i.e.*, fever, exercise, anemia, etc.). These murmurs begin after the first sound and well before the second sound, do not radiate, and rarely exceed Grade II-VI in intensity. They are not associated with abnormalities in splitting of the second sound, and as noted with other evidence of cardiac disease (*i.e.*, cardiomegaly, abnormal ECG, etc.). These murmurs are detectable by Phonocardiography in virtually all patients and clinically a careful auscultation in greater than 50 per cent of children.

Late systolic murmurs are usually thought

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to be innocent murmurs as well.<sup>3</sup> These may be quite loud, up to Grade 3/6, are usually best heard along the lower left sternal border and towards the apex. The pitch is usually low and there is considerable variation in intensity with change in position and with respiration. There is data to suggest that some of these late systolic murmurs may be associated with mitral regurgitation.<sup>4</sup> A pericardial cause has been suggested, though not proven.

In general, murmurs with diastolic components have been considered pathologic. The exception to this rule is the continuous murmur noted just under the neck either to the right or left of the sternum and referred to as a venous hum. This is the most common type of continuous murmur in childhood and is probably due to turbulence in the superior caval system as blood from the tributaries meet.<sup>5</sup> It is most commonly heard on the right over the area of the superior vena cava. The murmur is faint, usually high pitched, and generally has some diastolic accentuation. It may be heard bilaterally and occasionally only on the left side. Any process that increases velocity of jugular flow (changes in position, inspiration, anemia, fever, etc.) will increase the intensity of the sound. Pressure on the vein above will abruptly stop the murmur, as will turning of the head towards the side of auscultation.

In summary, innocent heart murmurs are the most frequent murmurs noted in children and are audible in well over half of all children examined. Three types are most commonly noted and are summarized in table I. In Type I, the structural heart disease to be differentiated includes most importantly atrial septal defects and mild pulmonary

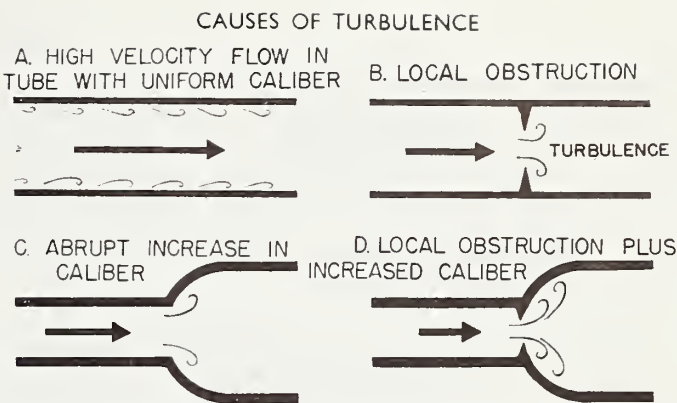


FIGURE 15. Laminar flow of fluids through tubes is silent, but turbulent flow produces vibrations. A, Turbulence tends to occur in fluids of low viscosity flowing at high velocity through tubes of large caliber, in accordance with the formula for Reynolds' number (see text). B, In a tube of uniform caliber, inserting a local obstruction produces turbulence at much less velocity of flow. C, Turbulence also tends to occur at reduced velocity where fluid flows into a channel of much larger diameter. D, When an obstruction occurs at the junction between a narrow channel and a wide one, relatively low velocity flow produces turbulence because the factors illustrated in B and C exert a combined effect.

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stenosis. Abnormal fixed splitting of the second sound is almost invariably seen in atrial septal defects as are other findings suggestive of heart disease (*i.e.*, enlarged active heart, and ECG abnormalities). In mild pulmonary stenosis, the murmur is usually more obviously crescendo decrescendo in character, and if obstruction is significant, higher pitched. In Type II, apparently mitral insufficiency can be confused, if present, increase in cardiac size and activity may give a clue. Type III is easily differentiated by jugular compression. If the significance or lack thereof is not obvious by auscultation, then further careful evaluation is needed.

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IDENTIFICATION OF FUNCTIONAL MURMURS

Murmur	Timing	Location	Intensity	Pitch	Character	Second Sound	Changes in Intensity
I	Early systole	Over the base, usually best heard over the pulmonary area. May be heard along LSB and at apex.	1-2/6	Low	Short, musical, with a hollow character.	Closely split and closes with expiration.	Will increase with anything increasing cardiac output. Little change with posture.
II	Late systole	Along the lower LSB and at the apex	2-3/6	Low	Short, may be twanging.	Normal splitting as above.	With changes in posture and respiratory phase.
III	Continuous	At the base of the neck just under the clavicles. Usually best on the right but may be bilateral or only on the left.	1-3/6	High	Continuous with diastolic accentuation.	Normally split.	Obliterated by occluding the jugular vessels, and by turning the head to the auscultatory side.



## ABSTRACT

### POSTERIOR FOSSA TUMORS

The authors reviewed 101 cases of infratentorial posterior fossa tumors from the files of the Johns Hopkins Hospital. Tumors occurred with approximately the same frequency (30 per cent) in the cerebellum, pons-medulla and cerebellopontine angle; seven per cent were in the fourth ventricle.

Astrocytomas and medulloblastomas are the predominant cerebellar tumors in childhood; in the adult, the astrocytoma and hemangioma are the major types. Tumors of the pons-medulla are usually a type of infiltrating glioma. Acoustic neurinomas formed most of the cerebellopontine angle tumors. Tumors of the fourth ventricle were medulloblastomas or ependymomas.

Supratentorial tumors present with ocular symptoms of visual field defects while infratentorial tumors disturb motility and the results of increased intracranial pressure. Tumors of the cerebellum cause varying forms of nystagmus, ataxia, dysmetria and a tendency to fall toward the side of the lesion. The authors found 70 per cent of the patients having papilledema (because of compression of the fourth ventricle). One-fourth had unilateral VI nerve palsy.

Patients with tumors of fourth ventricle presented with similar symptoms with early marked papilledema. If the tumor originated from the floor of the ventricle, there might be facial palsy, diminished corneal reflex

and involvement of the fifth, sixth, and seventh cranial nerves.

The anatomic site of the cerebellopontine angle tumors produced involvement of the cerebellar tracts and fifth, sixth, seventh, and eighth nerves. Loss of hearing and/or tinnitus were usually the first symptoms. Papilledema was a late finding and other earlier eye findings included nystagmus, blepharospasm, decreased corneal reflex and diplopia.

Tumors of the pons and medulla produce signs of bilateral involvement of the cranial nerves at the level of the tumor. Symptoms may include a horizontal conjugate palsy, central nystagmus and corneal hypesthesia. Cranial nerves VI through XII may become involved through posterior extension of the tumor.

Ocular Symptomatology of Posterior Fossa Tumors, T. E. Acers and R. Tenney, *Am. J. of Ophthalmology*, 65(6): 872-876, 1968.

**Reviewer's Note:** This article represents an excellent review of the eye symptomatology of posterior fossa tumors.—C. Bloedow, M.D.

The March-April 1968 issue of the *Cancer Bulletin* was written by the Oklahoma Medical Research Foundation. It contains general reviews of the following subjects—familial occurrence of cancer, modern techniques in the diagnosis of cancer, problems associated with chemotherapy, combined radiation and chemotherapy and non-endocrine secreting neoplasms.

## Books As Clinical Tools

### COMMUNICATION DISORDERS IN CHILDREN

CAROL SAUNDERS, M.D.

Older standard references in this area are good mainly for their historical interest because this field, as much or more than other areas in medicine, has continued to change with the advance of the technological era. The members of the Communication Disorders Conference at the Children's Memorial Hospital, University of Oklahoma Medical Center have collaborated to suggest certain reference sources in this field. The members of this interdisciplinary group consist of a pediatrician, an otorhinolaryngologist, an audiologist, a psychologist, and a medical social worker. The function of this team will be described in a forthcoming issue of the *Journal*.

None of these references have been published earlier than 1960 and they should provide a reasonably current source of information when one is confronted with a child who has difficulty communicating, especially when a loss of hearing is suspected.

*Textbook of Otolaryngology*<sup>1</sup> by DeWeese and Saunders is an excellent basic source. More specifically, *Audiology; Principles and Practice*<sup>2</sup> by Hayes A. Newby is good and

especially Chapter 11 "Training the Hearing-Impaired Child" is recommended to assist the physician in explaining necessary procedures to parents of hearing-impaired children. A well outlined and easy reference text is the *Audiological Evaluation of the Pediatric Patient*<sup>3</sup> by Miller and Polisar. *Deafness in Children*<sup>4</sup> by McConnell, Freeman and Ward is a well-written comprehensive survey of this problem. Also a good book to aid the physician in counselling with parents is *Stuttering (And What You Can Do About It)*<sup>5</sup> by Wendell Johnson. For more complete coverage of speech problems see *Diagnostic Methods in Speech Pathology*<sup>6</sup> by Johnson, Darley and Spriestersbach. □

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## *Malpractice: Curse or Blessing?*

NICHOLAS A. GIUFFRE

### PART I

**ARE** AMERICAN Insurance Companies sitting upon the proverbial "powder keg" in selling professional liability insurance, particularly, in the medical malpractice field? Are we "sitting ducks" in the face of rapidly developing, and ever changing trends in the social and economic life of the nation?

Who is able to say with positive assurance that he knows the reason for, and the answer to the growing adverse public opinion that is building up against a time honored and revered profession. Are we aware that this same adverse attitude has permeated and influenced our courts and juries to such extent that the old and familiar defenses, rules of evidence and perhaps, even justice itself has fallen by the wayside in favor of the "rule of sympathy" and astronomical verdicts?

What does the future portend for professional liability insurance, particularly, medical malpractice? Some insurance companies have claimed their losses in this field have been so great that they abruptly stepped out of the medical malpractice picture. If this trend continues, the problem may reach the stage where the question will be—not how much a physician will have to pay for such coverage, but rather—will he be able to buy it at any cost?

Similar difficulties are presently besetting the nation's hospitals, which are likewise targets for malpractice suits, as well as dentists, osteopaths, chiropractors, podiatrists, etc. In short, the men of medicine are becoming "fair game," and it's "open season" on all others engaged in the "healing arts."

It is estimated that malpractice claims are being filed at the rate of at least 6,000, and possibly as many as 9,000 per year. According to a conservative estimate of the American Medical Association, one out of every seven physicians, and/or surgeons in the United States has been sued at least once. In New York and the District of Columbia the ratio is one out of five. In California it is one out of four.

To a large extent, the rise in medical malpractice suits has paralleled the nation-wide rise in automobile accident claims, and personal injury litigation of all kinds, with courts and juries increasingly inclined to award higher and higher judgments to plaintiffs.

However, in malpractice, medical experts insist that many of the suits have been filed—and won—without a clear and definite proof of negligence on the part of the physician or surgeon.

To the medical profession, with its age old tradition of service, sacrifice and dedication, its just pride in its accomplishments and contributions to the general good of mankind and the high esteem in which it has been regarded by the general public, this "plague" known as malpractice has been completely incredible.

Until recently this situation made no sense to them, and accordingly, some of the men of medicine reacted with anger. They struck out at suing patients, accusing them as selfish, money-hungry ingrates. They denounced as treacherous and unethical any brother physician who dared to testify in behalf of a patient. They blasted patients' attorneys as ambulance-chasers and shysters and they damned malpractice suits as sacrilegious and absurd.



True, these malpractice lawyers, and their suits, many of which have absolutely no basis in fact, have caused serious harm to the medical profession, and to the public-at-large; but, in a way they have been a "blessing in disguise," and perhaps they may have helped medicine more than can presently be appreciated.

They have forced many men of medicine to take a long careful look at their procedures and then evaluate what they saw. It has forced them to be more careful in their diagnosis and treatment. In respect to cases of actual malpractice, the professional groups must recognize certain fundamental truths. There will be few instances of injury to patients resulting from ignorance, carelessness, or culpability of professional attendants when the moral and ethical standards of the practitioners are consistently high.

With greater experience, it has become possible to record more accurately the destructive by products associated with the "plague" of malpractice.

The misunderstandings, indeed, the ill-will engendered by the great and increasing number of malpractice suits has tended to break down the confidence of the public in the healing professions, and has been used destructively by many to advance their demand for socialized medicine.

However, adherence to the highest possible moral and ethical standards will not, *per se*, eliminate all false and non-meritorious claims of malpractice.

In respect to such fraudulent and illegitimate claims professional people have a further responsibility. There will be fewer instances of harm being done to the physician, surgeon, dentist, nurse, hospital, etc., when these practitioners and institutions of medicine understand fully how to govern and protect themselves under the law.

Actual or legitimate malpractice cases do occur, unfortunately. In such cases, the great majority of professional people earnestly desire the injured patient receive adequate compensation.

The most unprejudiced analysis however will disclose that by far the larger part of malpractice claims made, and suits brought

are of the non-meritorious or unjustified type.

Experience has taught that the most meticulous attention to the dictates of good medical practice is not sufficient to ward-off the unjust claim and, therefore, no physician or surgeon is immune. Medicine is not an exact science.

The triggering device in many a malpractice action has been found to have been the unwise comments, or criticism of physicians with regard to the nature and extent of the treatment given to patients by other physicians. These damaging comments include such remarks as, "how in the world could he have missed it?" Or, "it's a shame you didn't come to me first."

During the past 20 years there has been an alarming increase in the number of unjustifiable malpractice actions. And, because of such suits the men and women practicing the healing arts have suffered loss of prestige, loss of time, and sometimes, heavy loss of money.

Important to both physician and patients, because of the above, has been the effect upon the practice of medicine.

In some areas, physicians are calling for additional diagnostic tests even though there is no clear medical need or reason for such procedures. For instance, in the treatment of a patient who simply bumped or bruised an arm or leg, and even without the slightest indication of a broken or fractured bone, many doctors are calling for complete x-ray studies of the injured limb. Such tests will add 20, maybe 30 dollars to the bill of every patient; but, and "what a big but"—"in one case out of a thousand, it may protect the physician from a malpractice suit."

In many other cases, doctors are insisting upon medical consultations even though there are no positive medical grounds for seeking additional advice. In still other cases, doctors are demanding additional laboratory tests, additional hospitalization, and even additional nursing care, all to minimize the chances of being sued for negligence.

One reputable physician recently told me, "whenever a new patient comes into my office, I ask myself, is this the fellow who will be the first to sue me"? "I am beginning to decide my treatment not upon the basis of what is best for the patient, but rather, upon what will look best in court." The same doc-



tor added, "we can't help but be awed by the terrific effect of our modern treatments, the miracles wrought by our 'wonder drugs,' the amazing operations on the brain, and the heart, and for diseases that once were incurable." "All these new weapons of medical science are most effective but, and again, a 'big but'—they are also more potent and dangerous." "With the aid of these powerful weapons our patients, as a rule, don't die."—"Maybe they don't recover completely, but they stay alive, at least, long enough to go see a lawyer."

Unfortunately, there are some physicians today who refuse to accept their limitations. They do not call for help when it is needed. They undertake procedures for which they are not trained.

Fortunately, for all concerned, there now appears to be a concerted and determined effort among many members of the healing arts to get at, and endeavor to solve this perplexing and dangerous problem. They're on the "right track" when they ask themselves, "if I am not guilty of purely technical malpractice, could I be guilty of psychological malpractice?" In other words, "do I treat my patients with kindness, sympathy and understanding?"

The physician or surgeon who is repeatedly sued for malpractice is usually not the widely portrayed kindly practitioner who has made only a few slight human errors, and is undeservedly stripped of his public reputation, his professional standing and his fortune. Instead, in a high percentage of cases, he is a man who may be technically skilled, but who has little concern and respect for his patients, and whose past record is dotted with examples of sloppy medical practice.

The hospital that is the target for a high rate of negligence suits is rarely the glorified shrine of science, skill and unselfish team-work. Instead, in most cases it has been found to be a center for political skulduggery, and poor coordination among doctors, nurses and hospital officials.

The typical patient who sues for malpractice is usually not the average innocent citizen who has been wronged, and then reluctantly, and for the first time in his life, calls upon a lawyer to obtain justice for him. Rather, in most cases, he is an individual who expects the impossible from his doctor,

and often has a long record of law-suits against department stores, street-car companies, neighbors, friends and relations.

There is a growing fear that any doctor can be branded as negligent, even though he is not at fault. There is a growing fear among patients that some doctors are incompetent and that no doctor can be trusted.

This is the greatest danger ever to menace vital "doctor-patient" relationship. This is the cost of the medical malpractice problem.

## PART II

What is professional malpractice? Who may be charged? How is it proved, and what are the most effective prophylaxis?

Malpractice, in the law, may be described as the failure on the part of a physician, surgeon or any other person engaged in the practice of the "healing arts," to perform that duty which devolves upon him in his professional relation to his patient; such failure resulting in some injury to the patient.

This duty arises, as a matter of law, out of the relationship of physician and patient. It begins when the practitioner responds to the express or implied request that he attend the prospective patient, and then undertakes to render the professional services required of him. It ends only when the patient no longer needs the professional services, or when the practitioner is otherwise properly relieved of his obligation.

Any want of proper care or skill which diminishes the chances of the patient's recovery, prolongs his illness, increases his suffering or, in short, makes his condition worse than it would have been had due care and skill been exercised would, in a legal sense, constitute an injury.

Malpractice therefore, has two prerequisites. First, the practitioner must be derelict in the performance of his duty and, secondly, a definite injury to the patient must result from such failure.

Good medical practice is the standard. It comprehends what the average, careful and skillful physician in the community, or like communities would, or would not, do in the care of a similar case.

Malpractice, therefore, does not mean a physician's or surgeon's failure to render the very best of care to his patient. It does not



mean an honest error in diagnosis. It does not mean a failure to cure, or produce satisfactory results. Instead, malpractice simply means *the failure of the physician or surgeon to apply the average skill, and take average precautions in rendering his professional services.*

In the legitimate or actual case of malpractice, the failure to comply with the standard can be invariably traced to the practitioner's negligence, ignorance, willful departure from acceptable practice, or his breach of a positive law such as performing surgery or an autopsy without the consent of the patient, spouse or next of kin.

Surgery, except in emergency, without the consent of the patient is a trespass. It constitutes a technical assault, and may render the surgeon liable. The requisite consent may assume various forms. It may be expressed, implied, informed, or assumed, depending upon the circumstances of the particular case.

Physicians and hospitals have often been named defendants in actions predicated upon the theory that there has been an invasion of the right of privacy. This is a special right of the individual to withhold himself and his property from public scrutiny, if he so chooses; or, that the individual has been improperly exposed or exhibited as to cause him to suffer shame and mortification. There should, therefore, be no publication of a medical case record nor the showing of a picture, still or motion, without the knowledge and authorization of the patient.

A greater degree of skill and care is exacted by the law of the medical practitioner who holds himself out as a "Specialist" in any of the branches of medical science than that required of the physician who engages in "general practice" only.

Negligence or malpractice generally must be affirmatively proven by expert testimony. It has been loudly contended by plaintiffs' attorneys that because of this legal requirement, an organized "conspiracy of silence" exists among men of medicine and that the plaintiff in a medical malpractice case is often confronted with difficulties in proving negligence which do not ordinarily arise in other types of negligence litigations. One difficulty is the securing of expert medical

testimony. A second difficulty is proving specific acts of negligence of the defendant-doctor in those instances where the plaintiff is unconscious when he is injured, and *only* the defendant-doctor or some other person or persons entrusted with his care are able to explain the cause of such injury.

Whether or not such a conspiracy does in fact exist has been the source of much bitter debate and controversy. Even though it would appear there is no organized conspiracy in the medical profession, it is nonetheless apparent that an effective silence, to a certain degree, does prevail among many physicians.

This silence when combined with the limiting effects of the "locality" and "school" rules has led to vigorous complaints from plaintiff's counsel. To solve this dilemma several substitutes were offered, none of which have been widely adopted. Statutes allowing medical books and treatises to be introduced as direct evidence have not been very effective in every case. Another substitute, though limited in acceptance by the courts in a number of jurisdictions, is the use of the defendant—the physician himself—to establish the standard of care. This method, where permitted, has given the plaintiff, in a meritorious case his best opportunity for recovery. However, it usually "boomerangs" for the plaintiff in an unjustifiable claim.

Also, the courts are leaning more to the application of the doctrine of "*res ipsa loquitur*" (the thing speaks for itself) than heretofore. When this doctrine is applied, the plaintiff need not present expert testimony to support his claim of malpractice. In those cases where the plaintiff cannot secure favorable expert testimony, the use of the doctrine becomes essential to support his claim. Application of the maxim then, in effect, relieves the plaintiff of his inability to explain the events leading up to his injury, and places the burden of explanation upon the defendant-doctor. Use of "*res ipsa*" creates a *prima facie* case which, unless rebutted, will permit the case to go to the jury.

It does not mean, however, that the defendant-doctor is automatically adjudged guilty. What it means, from a practical standpoint, is the injured patient no longer has to secure expert testimony to prove the physician or surgeon had been negligent; rather



it places upon the practitioner the burden of proving he had not been negligent.

Naturally, we can understand why the use of this doctrine has been bitterly criticized by the medical profession as being in direct violation of a cherished American tradition, and constitutional guarantee namely, "a person is presumed to be innocent, until proven guilty." Under this doctrine the medical profession contends, the physician is guilty until he proves his innocence.

There can be no question but that the wide and frequent application of "*res ipsa*" in malpractice cases in recent years has created inequities. It is the feeling that this doctrine should be used sparingly because a physician's constant contacts are with the frailties, idiosyncrasies, physical and mental weaknesses, and allergies of human nature. These may, and in many instances do affect the general condition of the patient, and yet are conditions beyond his control.

The second element of "*res ipsa*" is also missing—the doctrine does not create liability without fault. The doctrine does not assume that there is necessarily, negligence preceding misfortune.

"*Res ipsa*," is applicable only to facts that in their very nature carry a strong and inherent probability of negligence.

In almost all of the legitimate malpractice suits the reason or cause can usually be explained. There is invariably some material departure on the part of the practitioner from the accepted standards, or the requirements of good medical practice. However, it is the non-meritorious or unjustified suit which causes the most concern and danger. These are the suits which are in the greater preponderance, and which demonstrate the need for the physician or surgeon to be well and generally informed so that he may reasonably expect to avoid the unjustified suit; and, if sued, he may be in a stronger position to wage a more effective defense.

It is the thoughtful, self-protecting practitioner who is much less likely to be sued than the totally malpractice unconscious individual, no matter how skillful and capable he may be. Any practitioner may fairly well determine, and adequately insulate, in advance, his malpractice vulnerability by scrupulously adopting the following effective prophylaxis:

He must give his patient sufficient attention.  
He must not neglect or abandon his patient.  
He must follow good common medical practice, in diagnosis and treatment.  
He must proceed diligently and without unnecessary delay.  
He must not experiment.  
He must find, or anticipate any condition reasonably determinable, or reasonably likely to develop.  
He must utilize all indicated diagnostic aids.  
He must secure legal consent to perform surgery, or an autopsy.  
He must give proper and reasonable instructions for the care of the patient, and for the protection of those who may come in contact with the patient.  
He must fulfill the terms of a special contract if he chooses to make one.

### PART III

*A physician or surgeon may be held vicariously liable where the actual negligence or malpractice is that of a third person for whose actions the physician or surgeon may be answerable. (41 Am. Jur; Physicians & Surgeons Sect. 107.)* In essence, this vicarious liability, an exception to the general law of negligence, imposes responsibility for loss upon one *who was not negligent and did not participate in the injury.*

The rationale for such liability may be found in the Theory of RESPONDEAT SUPERIOR (Let the Master Answer). Actual control is not necessary. It is the right of control and direction which becomes the determinative factor in most instances.

RESPONDEAT SUPERIOR applies in the majority of jurisdictions to any surgical procedure involving a "surgical team." In the case of *McConnell v. Williams*, 361 Pa. 355, 65A 2d. 243, (1949) Justice H. Stern in applying the above maxim enunciated the principle, which has become known, as the CAPTAIN OF THE SHIP DOCTRINE. In this decision Justice Stern stated that, "until the surgeon leaves the operating room at the conclusion of the surgery he is in the same complete charge of all those who are present and assisting him as the captain of the ship over all those on board." The surgeon's responsibility for the acts and decisions of the "operating team" was generally limited to those within the confines of the operating



room *per se*. However, Pennsylvania, which leads all other jurisdictions, appears to have gone outside the immediate operating room to hold the surgeon responsible for negligent acts of hospital employees, such as interns and laboratory technicians not physically present and assisting during surgery, but whose services were utilized in the total operative procedure, 397 Pa. 28, 153 A. 2d. 255 (1959); 404 Pa. 561, 173 Atl. 2d. 48 (1961); 327 Fed. 2d. 42, (1962). However, Florida appears to have receded somewhat in the application of this doctrine. In the case of *Buzan v. Mercy Hospital, Inc.*, 203 So. 2d. 11, (1967) the court limited the responsibility of the surgeon for the acts and decisions of the "operating team," in this case the assisting nurse within the operating room, to those acts and decisions which involve professional skill and decision. The court went on to hold that for those services or acts not involving professional skill or decision, and which are ministerial in character such as a "sponge count," a hospital nurse assisting a surgeon is not regarded as his "borrowed servant," but a servant of the hospital.

It has been generally contended that the purpose of the doctrine was to provide redress to an injured patient in those jurisdictions where the hospital was protected by the charitable immunity doctrine. In most states the doctrine of charitable immunity has now been or may be abrogated, and the captain of the ship fiction is or may no longer be necessary to provide such redress.

#### LIABILITY OF HOSPITALS

A hospital, charitable or private, is not generally liable for injuries to patients resulting from surgical operations or from treatment in the hospital when the surgeon who performs the surgery, or the physician who treats the patient, is employed by the patient or by someone other than the hospital's employees, and the injuries result solely from the negligence of such surgeon or physician. The reason being that their professional services are not subject to the control or direction of the administrative officers or employees of the hospital. The general rule therefore, is well established

that the hospital does not accept responsibility by contract or become liable in tort for the acts of physicians, surgeons or special duty nurses who treat patients in the institution; absent evidence which clearly shows a partnership or joint undertaking between the hospital and the attending physician, surgeon or special nurse.

However, all hospitals have the duty to permit only competent physicians, surgeons and nurses to use hospital facilities whether they practice there as regular members of the hospital staff or at the selection of the patient.

Hospitals may be liable to the public by their own failure as organizations to adopt required safeguards and procedures designed to protect the patient, or by the malpractice of an employed physician or surgeon or the negligence of an employed nurse, technician or aide. Such liability derives from the rules of "RESPONDEAT SUPERIOR" irrespective of the charitable nature of the hospital, except in those states where the doctrine of charitable immunity has not been abrogated.

Hospitals are places where in addition to the house staff, i.e., employed physicians, the patient's own private doctor is allowed to practice his profession. When the patient has his own private doctor the hospital renders only hospital care and is not generally liable for the malpractice of the private physician except where it knowingly permits an incompetent doctor to practice therein or it permits an illegal or unrecognized procedure to be carried out.

The hospital owes the duty of furnishing the patient with a competent nurse, but is not liable for the negligent acts of a "special duty" nurse as she is deemed to be the patient's employee.

The degree of care required is that of reasonable care and diligence, and it is generally measured by the ailments of the patient known to the hospital personnel. The standard is that which prevails in similar institutions in the community, and any harmful departure from such standard will be deemed negligence. However, no liability will result from the honest error of judgment of a qualified person.

#### PROBLEM AREAS

1. *Consent*: an operation performed with-



out consent, absent an emergency, is a battery, and will usually result in liability.

2. *Emergency Room*: a duty arises with the acceptance of the patient although there is no duty to accept him if facilities are lacking or if the personnel on duty is so completely occupied that it is impossible to render care. Under these circumstances the only duty is to preserve life and to effect a prompt transfer to another hospital with at least sufficient facilities.

3. *Restraints*: where either the patient's physician prescribes sideboards, or where the circumstances would lead a reasonable hospital employee to think bedboards or railings are necessary because of the patient's condition, failure to install same may be considered negligence. However, the mere fact that a patient without prior warning, not in a debilitated condition and without orders for siderails, falls out of bed does not, *per se*, create liability.

4. *Defective Equipment*: hospitals are liable for equipment which they furnish and which they should have known was defective. In cases of sophisticated pieces of equipment where there are questions of control, such as an anesthesia machine exploding, the doctrine of *res ipsa loquitur* will, in most cases, be inapplicable. Whereas, with collapsing examination tables, beds, wheelchairs, etc., *res ipsa loquitur* will in all probability, be applied.

5. *Injections, Infusions and Transfusions*: an injection into a nerve of a stale drug, or of the wrong drug, is obviously negligence; so is the failure of the staff to detect or prevent infiltration into the tissues of the drug from an intravenous injection. However, when due care is exercised, *i.e.* sensitivity tests being administered with negative results, the mere violently allergic reaction will not infer negligence.

With respect to blood transfusions, administration of mismatched blood is *res ipsa* proof of negligence, so too, is the giving of blood to the wrong donee, or the failure to ascertain that the blood was in fact ordered for the particular patient. However, the mere fact that the blood given results in serum hepatitis is neither negligence nor a breach of warranty. The courts have held the giving of blood to a patient by the hospital is a service to which no warranty attaches.

Two cases recently decided in Florida, *Russell v. Community Blood Bank Inc., Fla. App. 1966, 185 So. 2d. 749*, and *Hoder v. Sayet, Fla. App. 1967, 196 So. 2d. 205* held that an implied warranty existed against the blood bank but not against the hospital, because the sale of blood to the patient was not by the hospital but by the blood bank. However, the issue of negligence on the part of the hospital and the blood bank must be distinguished from the allegation of breach of implied warranty of merchantability. As to the hospital, Florida still follows the majority view, in a suit brought against the institution for breach of implied warranty; namely, "A transfer of blood by a hospital to a patient is not a sale but a service." In the Hoder case the court held the blood bank, but not the hospital, liable for breach of implied warranty, stating however that both *could* be held liable for negligence in a tort action. Russell and Hoder were confirmed in the most recent case of *White v. Sarasota County Public Hospital Board, Dist. Ct. App. Fla., 2d. Dist. Case No. 67-98, Jan. 17, 1968*.

6. *Burns*: whether by X-ray, heat lamp or hot water bottles, a patient who is burned usually has a good cause of action against the hospital. However, care must be exercised so as not to confuse such cases with those where the burn may be a natural result of an unavoidable treatment, such as cobalt radiation, or blood exchange, or open heart surgery cases where hypothermia is used; in such instances the burn to the part of the body which is directly involved in the procedure is in the nature of an operative scar, and no liability will attach.

7. *Careless Drug Handling*: improper labeling, retention of stale or decomposed drugs, careless placing of vials and mismatching of drugs obviously create liability.

8. *Anesthesia*: failure of the anesthetist to examine and evaluate the patient before an operation; failure to observe the level of anesthesia; failure to insist that stomach lavage be done with resulting vomiting and the aspiration of food; failure to check vital signs; failure to note impending cardiac arrest; failure to advise balance of the surgical team, etc., are some of the problem areas where liability may be imposed upon the hospital.

9. *Foreign Objects*: hospital employees are generally responsible for the sponge and



needle count. The surgeon is generally responsible for the removal of all objects and especially instruments. The finding of a sponge in a patient will create a *prima facie* case, possibly *res ipsa*, against both the hospital and the surgeon. The finding of an instrument will create a "prima facie" case only against the surgeon and possibly the assistant surgeon depending upon the duty delegated to him.

Where a needle breaks, in spite of proper care, no liability will attach against anyone; however, concealment of this fact will create absolute *res ipsa* against the physician.

10. *Abandonment*: failure to respond, or failure to see the patient or an unwarranted delay or cessation of treatment create liability provided such omissions are those of the hospital.

#### PART IV

#### NURSES

Graduation from an accredited school of nursing is a prerequisite to licensure under the Nurse's Practice Act in almost all of the states. General-duty nurses employed in hospitals are, as a rule, required to be registered under the particular State's Registry or Practice Act. So, too, are special-duty nurses.

Only the registered or licensed nurse may legally perform the functions of the professional trained nurse. The registered or licensed nurse is authorized to practice, except in an emergency, only under the orders and directions of a duly licensed physician.

"Standing Orders" from no matter what source cannot delegate to the nurse the power, right or license to practice medicine. Nurses in general-duty commit negligence not malpractice. However, in the case of a "specialist" nurse, such as a Nurse Anesthetist, or any other specially trained and qualified nurse, an action for malpractice may be brought against her. As contrasted with the nurse in general-duty nursing, the acts of the special-duty nurse do not ordinarily create liability on the part of the hospital, since the special-duty nurse is generally regarded as being the agent of the patient who employs her services, and not the agent or employee of the hospital. The right of

control is the determinative factor in the question of whose agent the special-duty nurse is.

A nurse may be guilty of negligence when she fails to summon the physician under circumstances which demand such action; or when she fails to carry out an order; or when she carelessly performs an order; or when she fails to respond to a patient's call; or when she fails to exercise her own good judgment under the circumstances.

#### MEDICAL RECORDS

It has often been said that good medical records are indicative of the good physician, surgeon, nurse and hospital.

Good records are essential for the benefit of the patient, important for statistical and teaching purposes, and the chief bulwark of the defense whenever a claim for malpractice or negligence is asserted.

A good medical record contains sufficient data to justify the diagnosis, the treatment and the result. It should be so maintained that in the event of a change of physician, the new physician coming in the case may carry on the care of the patient intelligently and effectively on the basis of what is then contained in the record.

A good record reveals an accurate picture of the case at all times, from admission to discharge.

The basic portion of the hospital medical record consists of the history, the physical examination and copies of reports of the laboratory examinations. These should justify the diagnosis, at least a "working diagnosis." If a full diagnosis cannot be made at the time, it should be so noted on the chart, and generally in such circumstances, consultation should be had. The consultant's findings and recommendations, signed by him, should then be attached to the hospital record. These entries unite to form the physician's order sheet, the foundation of a good medical record.

By means of progress notes, a continuing and running picture of the developments in the case, the course of the injury or disease, the occurrence of complications, etc., is clearly set forth and evaluated. Indicated consent and other special forms, properly completed, should be attached.



Each progress note should include the patient's complaints and the physician's objective findings at the time the entry is made. It is important that a progress note be made at the time of discharge and the note should be sufficiently comprehensive to describe fully the patient's condition at that time.

Despite the fact that at present many hospitals must function with reduced personnel, it is important that nurse's bedside notes be not permitted to become unduly skeletonized. It is important that every nurse in attendance upon a patient be required to record on the chart the patient's complaints, and her own observations during each tour of duty on the case.

It should be mandatory that all orders be signed by the attending physician. Orders given over the telephone should be noted on the chart, and signed by the physician on his next visit to the hospital. The hour and the date should be entered in connection with every order placed on the hospital chart and reasonable diligence should be demanded in respect to the completion of every portion of the records.

Pre-operative histories should be mandatory. If the hospital is not forewarned to take the necessary and protective measures, it may find itself without a good defense in the event of suit.

It should be a rule of the hospital that the anesthetist not proceed with the administration of anesthesia unless the case has been properly "worked up." If the surgeon states the case is "on-emergency," he should be required to sign a statement, to be attached to the chart to the effect that he is aware of the fact that there is no blood count, or urinalysis, or history, or physical examination recorded on the record, and that he assumes responsibility for this omission. In a number of cases there have been serious legal repercussions in connection with cases that went to surgery with "blank" charts.

In the event the patient sustains or claims to have sustained an injury while in the hospital, the patient should immediately be examined by his attending physician, if possible and practicable, and by another physician nominated by the hospital. Their findings should be made a part of the patient's record. In such circumstances, it is advis-

able that full disclosure be made to the patient or to someone on behalf of the patient.

There are many litigated cases which illustrate how effective good medical records are especially in the defense of the unfounded or non-meritorious claims of malpractice. Conversely, there are equally as many suits involving unjustified malpractice claims against physicians and surgeons and hospitals which have been prejudiced or lost because of an inadequate or poor record, the thoughtless use of an improper word or words, or, a careless and/or misleading entry, etc.

Illustration of the above is the case of the "house physician" who started his history with this statement, "This patient was operated on five days ago by a quack." The impropriety of this statement is obvious.

In another case, the patient underwent a laparotomy. The appendix had ruptured and peritonitis was present. The patient died on the fifth post-operative day. The progress notes, four in number, were grossly inadequate. The last of the series of notes, entered some twelve hours before death, read, "patient's condition stabilized and satisfactory in every respect." What can the defendant say, or how can he answer when asked to explain the progress note in court?

In still another case, a female patient with a pre-operative diagnosis of ovarian cyst was operated upon. It was found during surgery that she was three months pregnant. She then miscarried. The hospital record failed to disclose that she had been asked the date of her last menstruation or any questions regarding that function.

Suffice it to say that in all these cases verdicts were rendered by juries in favor of the plaintiffs because of the palpable indifference to propriety and the requirements of good medical practice by the responsible individuals. Indeed, such litigation should never have occurred. Money and time were expended unnecessarily and, perhaps more important, another "thorn" was needlessly added to the public's image of the healing arts.

It is cases such as the aforementioned, coupled with the shocking number of other types of claims both justifiable and non-meritorious, which provoke the thought—What Price Malpractice? □



## Clinical Society Holds 38th Annual Fall Conference

October 28th-30th will be the dates of the 38th Annual Fall Conference of the Oklahoma City Clinical Society. The meeting, to be held in the Skirvin Hotel in Oklahoma City, will feature three days of scientific lectures.

Wednesday, October 30th, will be devoted to a symposium on the subject "The Failing Circulation." Jointly sponsored by the American College of Cardiology and the clinical society, the symposium will feature four physicians from the Mayo Clinic and two from the University of Oklahoma School of Medicine. The program will include a discussion of the pharmacological actions and indications of the various digitalis and diuretic preparations. The diagnosis and treatment of occlusive vascular disease, aorta, cerebral, renal, etc., will be presented in detail. Non-members of the clinical society attending this one-day symposium will be charged a \$15 registration fee which will include a luncheon.

Luncheon meetings will be held each day in the hotel and the guest speaker for the Monday luncheon will be Doctor Edward R. Annis of Miami, Florida, member, Board of Trustees and past-president of the American Medical Association. Wives are invited to this luncheon meeting and reservations must be made by Monday morning at 9 a.m.

The guest speaker for the Tuesday luncheon will be Doctor James L. Luke, Medical Examiner for the State of Oklahoma, and the Wednesday luncheon will feature the guest speakers participating in the Wednesday symposium.

Social functions during the meeting will include an oyster and "keg" party on Monday evening from 6 to 7:30 p.m. in the hotel. The annual banquet honoring the guest speakers and associate members and wives

will be held on Tuesday evening in the Persian Room at 8 p.m. A social hour at 7 p.m. will be held in the East Wing of the Persian Room preceding the banquet. Special musical entertainment will be provided by the "Cry-Slurs," an outstanding musical group from Northwest Classen High School.

The auxiliary of the Oklahoma County Medical Society has planned special daytime events for the visiting ladies, which will include a style show and luncheon on Tuesday in the Persian Room of the Skirvin Tower Hotel. Several Monday evening dinner meetings have been planned by specialty groups including dermatology, OB-GYN, psychiatry, surgery and urology.

Advance registration fee for the fall conference will be \$25 and may be sent to the Executive Office of the Oklahoma City Clinical Society, 2809 N.W. Expressway, Oklahoma City, Oklahoma 73112. □

## Physicians and Clergy To Discuss "Marriage"

"Marriage: Medicine and Religion" will be the topic of a statewide conference for physicians and clergymen to be held at the Camelot Inn in Tulsa on December 5th. The conference, co-sponsored by the OSMA's Committee on Religion and the Oklahoma Council of Churches, will be open to all ministers and physicians.

The all-day meeting will feature talks by both physicians and clergymen with time set aside for questions from the audience.

James L. Dennis, M.D., Vice-President of OU Medical Center Affairs, will deliver an address on the subject "Medicine, Population and Responsibility" at a noon luncheon during the meeting.

Other speakers at the meeting will include the Reverend L. Mack Powell, Director of the Oklahoma Pastoral Institute, and Chaplain Ben Patrick of Hillcrest Medical Center in Tulsa.

Doctor Ed Norfleet, Chairman of the OSMA Committee on Medicine and Religion, has issued a special invitation to all Oklahoma physicians and their wives to attend this conference in Tulsa. There will be a \$5 registration fee which will include the luncheon. Those persons interested in attending should contact the OSMA Executive Office in Oklahoma City for reservations. □

## OSMA Slates Health Planning Conference

Comprehensive Health Planning in Oklahoma will be the subject of a special statewide conference to be held in Oklahoma City on November 17th for all members of the OSMA. Sponsored by the OSMA Governmental Relations Committee, Robert Sukman, M.D., Chairman, states the purpose of the conference will be to acquaint Oklahoma physicians with the CHP program.

In a recent letter to all members of the Governmental Relations Committee Doctor Sukman said, "Perhaps the most significant federal-state activity at the present time is comprehensive health planning. The State Health Planning Agency, financed by federal funds, is embarking on a program to study problems and solutions for a more orderly delivery of public and private health services to the Oklahoma people."

The chairman went on to say, "Oklahoma has been divided into 11 planning regions, and full-time offices and advisory councils are being established in each area. The proposed program (conference) is to educate our members and their wives about this activity and to inspire them to provide medical guidance by serving on the regional advisory councils."

The tentative conference program includes the following topics: "An Explanation of Public Law 89-749, Comprehensive Health Planning and Public Health Services Act."; "Po-



litical Science Overtones of Health Planning"; "Health is a Community Affair"; "The Planning Process—Orientation and Techniques"; "The Planning Process—Organization, Jurisdictions and Goals"; and "Coordination of the Oklahoma Regional Medical Program with Health Planning."

Several nationally known experts have been invited to attend and participate in the conference. These include Doctor Charles L. Hudson, M.D., former AMA President and now Director, AMA Health Services Division. □

## Alcoholism, Subject Of Third Mental Health Conference

"Alcoholism" and the problems related to it will be the subject of discussion at the upcoming Third Statewide Conference on Mental Health to be held in Oklahoma City on Thursday, February 6th, 1969. OSMA's Committee on Alcoholism, chaired by Charles E. Smith, Jr., M.D., is cooperating with the Council on Public Health, chaired by Hayden H. Donahue, M.D., to plan and coordinate the conference.

All groups working with alcoholics are being invited to attend the meeting. These include all members of the OSMA, the Women's Auxiliary, employees of the Department of Public Welfare and the Health Department, members of the Association of Mental Health, ministers from all denominations.

A tentative program for the conference includes such topics as "Government's Role in the Problems of Alcoholism," "Oklahoma, the Law and Alcoholism," "Accidents and the Alcoholic," "Alcoholism and the College Students," and "Alcoholism on the Local Level." This last named topic is to be given by a member of the Alcoholics Anonymous and will be used to give those in attendance the 12 points that the AA's use in working with alcoholics.

The first two statewide mental health conferences drew over a 1000 persons each and it is expected that this one will have even a wider appeal. □

## Nicholson Lectureship Set for Medical Center

A pediatric lectureship will be established at the University of Oklahoma Medical Center in memory of Doctor Ben H. Nicholson, 64, revered faculty member who died September 25th, Doctor James L. Dennis, OU Vice-President for Medical Center Affairs, announced today.

Memorial contributions from Doctor Nicholson's professional colleagues, friends, and patients and their families have been placed in a special account to start the Ben H. Nicholson Memorial Lectureship fund.

Pediatricians of international reputation in patient care, teaching and research will be invited to give the annual spring lecture for students and faculty members, Doctor Dennis said. The first will be scheduled for the spring of 1969.

Doctor Nicholson, in private practice in Oklahoma City for 38 years, had been on the volunteer faculty since 1931. He was a clinical professor of pediatrics at the time of his death.

Contributions, which are tax deductible, may be made to the Ben H. Nicholson Memorial Lectureship Fund, University of Oklahoma Medical Center, 800 N.E. 13th, Oklahoma City 73104.

Said Doctor Harris D. Riley, Jr., pediatrician-in-chief at the Children's Memorial Hospital:

"Doctor Ben Nicholson was one of the great men of pediatrics. His contributions to the improvement of child health and to medical education in Oklahoma, the Southwest and the nation were enormous. He was a master pediatrician and was widely sought as a consultant. I have never seen a physician to whom children were so quickly attracted and in whom they immediately had such complete trust."

"Despite the fact that he had a busy private practice, Doctor Nicholson had always played a vital and important role in the activities of the Children's Memorial Hospital and the University of Oklahoma Medical Center," he continued.

"He was a superb teacher. He

chaired or was a member of some of the school's most important committees, including the Curriculum Committee and the committee to select the Dean and Director of the Medical Center. Because of his scholarly pursuits, his devotion to the welfare of children and to education, I can think of no more appropriate manner to honor this person who has contributed so much. I know that he would have been deeply gratified by this unique and important gesture."

A native of Tennessee, Doctor Nicholson was graduated from Vanderbilt University School of Medicine at Nashville. He was affiliated with the Oklahoma City Clinic, which he served as president, and was a past-president of the Wesley (now Presbyterian) Hospital Foundation.

He was Editor-in-Chief of the *Journal of the Oklahoma State Medical Association* from 1954 to 1961. In 1961 *The Journal* was judged the best state medical journal in the nation. He was appointed again in July following the death of Doctor C. B. Dawson.

His many professional organizations included the American Academy of Pediatrics and the American Medical Writers Association. □

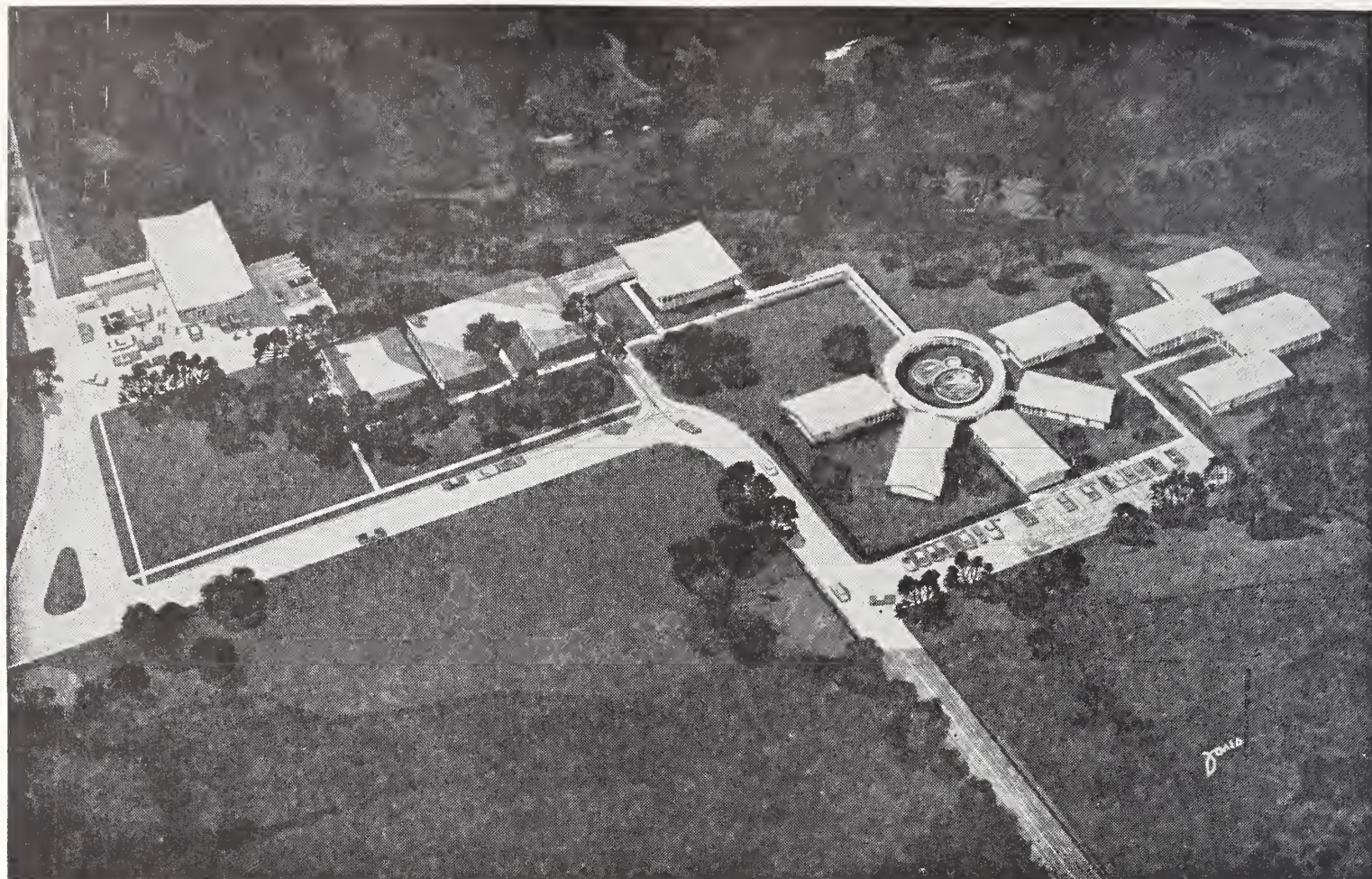
## 1969 Directory Due In November

Listing Oklahoma physicians alphabetically and by city of practice, the 1969 Directory of the Oklahoma State Medical Association will be published in early November. Copies will be distributed to all physician-members.

The 94-page booklet lists all members of the OSMA in alphabetical order, giving their name, year of birth, medical school and year of graduation, specialty, office address, office telephone number and information on their membership status in the OSMA. The roster by cities of practice lists the physicians in alphabetical order and gives their specialty.

Distribution of the directory is a service of the OSMA and each member receives one complimentary copy. Additional copies may be ordered by physicians for \$1 each from the Executive Office in Oklahoma City. □





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## Asian Flu A Threat

The occurrence of a sizable outbreak of influenza in Hong Kong recently has caused the AMA Council on Environmental and Public Health to issue a statement predicting that the United States may experience extensive occurrences of flu during the coming winter.

An altered strain of A<sub>2</sub> (Asian) influenza virus is being brought back to the United States by servicemen and travelers from the Hong Kong area. The Surgeon General of the Public Health Service has urged licensed vaccine manufacturers to begin the development and production of a monovalent vaccine containing this strain as soon as possible. It will probably take from three to six months to produce any substantial amount of the new vaccine.

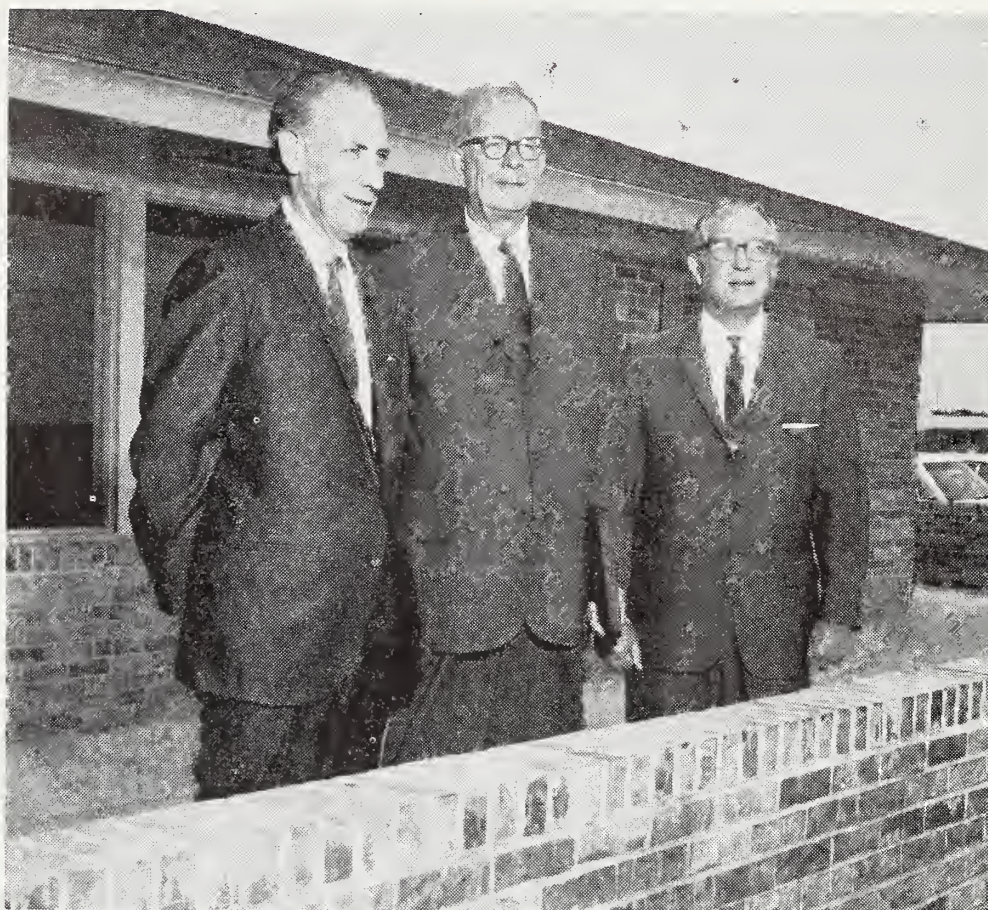
Currently available vaccine should be administered to those groups at greatest risk of mortality or of serious complications from influenza, and these high risk groups should be given the highest priority for receiving the new monovalent vaccine when it becomes available.

High risk groups include persons over 45 years of age and even more notably those over 65, and those individuals with chronic illness as defined as follows:

1. Patients with rheumatic heart disease, especially with mitral stenosis;
2. Patients with such cardiovascular disorders or arteriosclerotic heart disease and hypertension, especially showing evidence of frank or incipient cardiac insufficiency;
3. Patients with chronic bronchopulmonary diseases such as asthma, chronic bronchitis, cystic fibrosis, bronchiectasis, pulmonary fibrosis, pulmonary emphysema, or pulmonary tuberculosis.

The council also recommended that individual practitioners report any increased incidence of flu-like respiratory disorders promptly to local and state public health agencies for early identification of the causative virus. □

## "Project Responsibility" Dedicated



On a patio of the new Wakita Community Health Center are Dwight L. Wilbur, M.D., center, San Francisco, AMA President who gave the dedicatory address September 14th; Scott Hendren, M.D., left, OSMA President; and James L. Dennis, M.D., OU Vice-President for Medical Center Affairs. The center is the pilot rural community health unit in the University of Oklahoma Medical Center's "Project Responsibility." □

## Board of Health Chooses New Officers

An Enid dentist and a Tulsa osteopath have been named President and Vice-President of the Oklahoma State Board of Health. Ortho R. Whiteneck, D.D.S., was elected President and Robert B. McCullough, D.O., Vice-President.

Whiteneck replaces Bert T. Brundage, M.D., Thomas, as President and has been a member of the Board since 1947 and served as its Vice-President for 14 years. He was originally appointed by Governor Roy J. Turner and re-appointed by Governor Bartlett in 1967 to a nine-year term.

McCullough has served on the Board since 1960 and is past-president of the Oklahoma Osteopathic Association.

Robert L. "Bert" Loy, Oklahoma City, was re-elected secretary, a post he has served since first appointed to

the Board of Health in 1945. Loy is past-president of the Oklahoma State Hospital Association and a fellow and life member of the American College of Hospital Administrators and the American Hospital Association.

Doctor Brundage will remain on the board along with Wayne J. Boyd, M.D., Bartlesville; Carl D. Osborn, M.D., Ada; Eugene A. Owens, M.D., Lawton; Glen L. Berkenbile, M.D., Muskogee; and Mr. Harold Toaz, School Administrator of Kiowa, Oklahoma.

The nine members of the State Board of Health are appointed by the Governor and confirmed by the Senate for regular terms of nine years each. The board appoints a Commissioner of Health and adopts rules and regulations to implement services delegated to them. □



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## Groom Named Director of Regional Medical Program



Dale Groom, M.D., former Assistant Dean of Postgraduate Education at the Medical College of South Carolina, assumed duties October 1st as Director of the Oklahoma Regional Medical Program. He will replace Doctor Kelly West who has been serving as Acting Director until a full-time director could be employed.

Doctor Groom is a native Oklahoman and was born in Tulsa in 1912. He received his A.B. degree from Hiram College in Ohio, 1936 and his M.D. from Medical College of Virginia in 1943. In 1949 he completed his M.S. in Medicine at the University of Minnesota. From 1944 until 1946, during World War II, he served with the United States Navy.

In addition to his duties as director of the regional medical program, he will also serve as a Professor and Associate Dean of the Department of Continuing Education at the University of Oklahoma Medical Center and has been appointed Professor of Medicine.

Several other appointments to the medical center staff were announced.

Named Professor and Head of Oklahoma's new Department of Neurology was Ralph Irving Druckman, M.D., previously an Associate Professor of Neurology at the University of Colorado School of Medicine. Neurology had been a division of the Department of Psychiatry and Be-

havioral Sciences at the medical center.

Another new professor is Thomas Allen Bruce, M.D., recently appointed in the Department of Medicine. Doctor Bruce, professor and an assistant dean at Wayne State Medical School before coming to Oklahoma, is also Chief of the Cardiovascular Section at the Oklahoma City Veterans Administration Hospital. □

## Voters To Decide Fate Of State Health Center

The fate of the multimillion dollar expansion program of the OU Medical Center will be decided on December 10th when the voters of Oklahoma decide on State Question 463. This question was created by the 31st Oklahoma Legislature and will submit a \$99½ million bond program to the people for their rejection or approval at a special election.

Approximately \$27 million in the issue will be money for the medical center expansion. If approved, this bond money will be used for implementation of two phases of the ten-year plan for development of the Oklahoma Health Center plan for the medical school area. The proposal also carries a \$4½ million item for construction of a new State Department of Health facility in the center.

The bonds would be retired from present cigarette taxes, including revenue from the 5 cent tax increase which became law on March 15th of this year.

Implementation of Phase I and Phase II of the Health Center plan will add new schools of nursing, dentistry, public health, and health related professions, and would greatly expand other education and training facilities of the present OU Medical Center. The bonds would also finance ambulatory medical clinics, dental clinics, rehabilitation and chronic disease facilities, the second 200-bed unit of the new University Hospital, an auditorium and general facilities, a student union, administrative facilities, and would provide for remodeling and renovation of vacated spaces, land acquisition and a graduate education center.

During the May OSMA House of Delegates meeting in Oklahoma City, the house voted to "approve in concept the expansion of the University of Oklahoma Medical School complex and support the proposed bond issue for funding of same." □

## West To Lecture on Clinical Nutrition

Kelly West, M.D., Professor of Medicine at the OU Medical Center, will speak on the topic, "International Development with Special Emphasis on Malnutrition As a Multidisciplinary Problem," at two Oklahoma colleges in November and December. The lectures will be a part of the AMA's program on clinical nutrition which will be given at five colleges and universities in Oklahoma.

The other lectures will be given by Ernest Beutler, M.D., Chairman of the Division of Medicine and Director, Department of Hematology at the City of Hope Medical Center. His lecture will be entitled "Effects of Iron Deficiency and Iron Excess" and will be given at Oklahoma State University in Stillwater on Wednesday, February 19th and at Southeastern State College in Durant on Thursday, February 20th, and at Tulsa University in Tulsa, on Tuesday, February 18th.

Doctor West will speak at Northwestern State College in Alva on Tuesday, November 26th, and at Northeastern State College in Tahlequah on Monday, December 2nd.

Doctor West is particularly suited to speak on the topic of nutrition. He is associate editor of the scientific journal "Metabolism" and serves as consultant for the Pan-American Health Organization which is an element of the United Nations Health Program. He currently serves on the Advisory Committee on Health of the Agency for International Development.

He has written approximately 58 papers pertaining to his work, as well as a number of articles for the *OSMA Journal*. Many of these publications relate to international development, international science or nutrition. □



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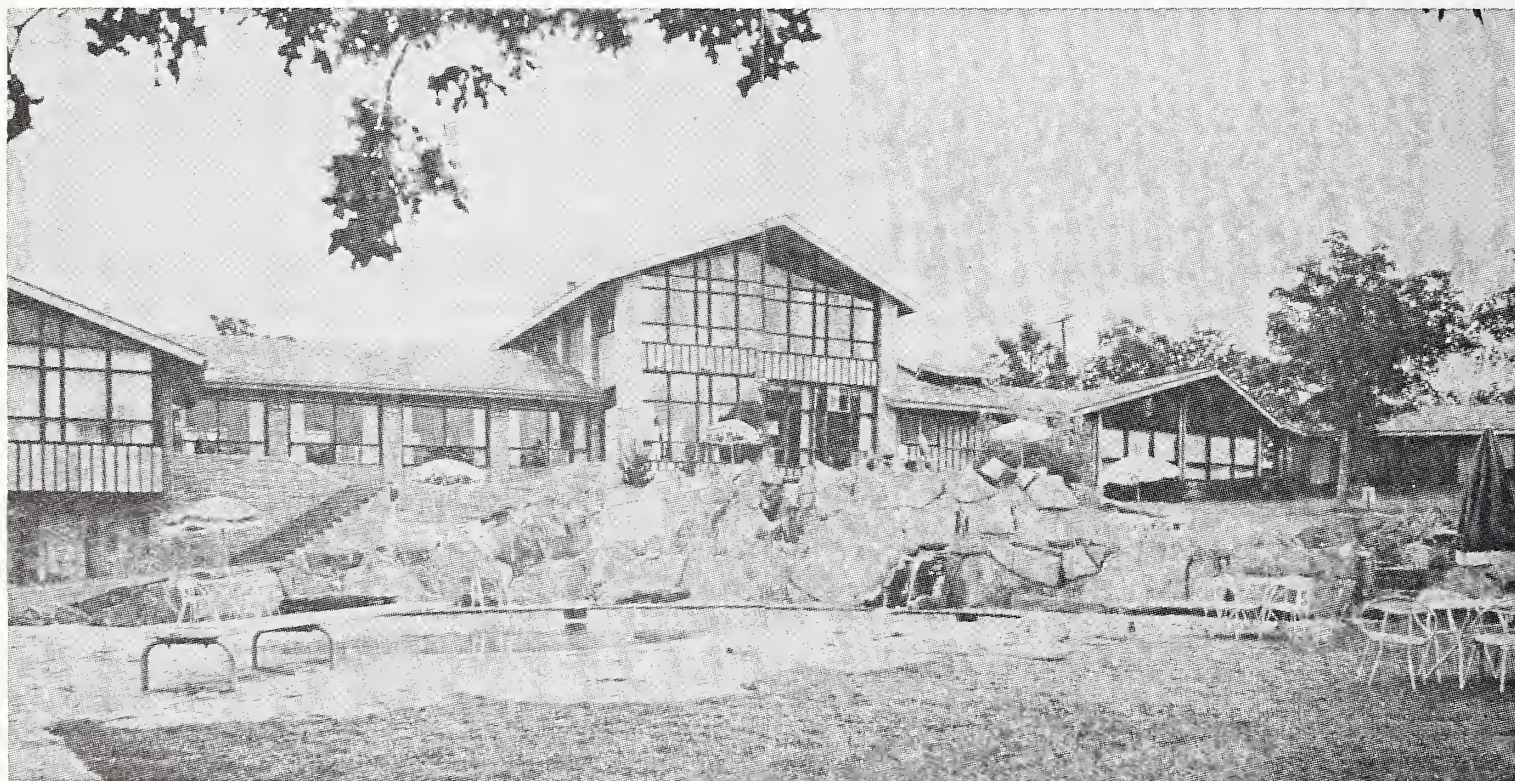
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## HEW Sponsors Regional Conference on Health Care Costs

Three Oklahoma physicians are expected to attend a Department of Health, Education and Welfare regional conference on health care costs in Dallas on December 17th and 18th. The meeting is to be attended by invitation only and Scott Hendren, M.D., President of the OSMA, has nominated a list of four people for HEW to use in selecting Oklahoma's three representatives.

The conference is being held on the basis of Social Security Region 7 which includes Arkansas, Louisiana, New Mexico, Oklahoma and Texas. Selected leaders from the health community, the insurance industry, labor and the general public are being invited to attend.

A news release from HEW quoted Wilbur Cohen as saying, "The regional conferences will provide forums for productive discussions on experiments and demonstrations relating to health care costs while maintaining or improving the quality and the delivery of medical care."

On April 26th of this year, Secretary Cohen outlined 14 problem areas that he felt needed to be studied in the regional conferences. The problems included the following: (1) The supply of certain services, such as those of physicians and nurses, is inadequate. (2) There is often an excess in supply—duplication—of certain other services and facilities, including some very expensive hospital services; and health facility planning is not now performed adequately. (3) The disadvantaged often have inadequate access to medical care. (4) There are often shortages and less costly alternatives to hospital care such as out-patient care, home health services, extended care facilities and nursing homes. (5) Some costly services, especially hospital services, sometimes are utilized unnecessarily. (6) Many private health insurance plans produce undesirable incentives to use the most expensive methods of care. (7) Many possible hospital management improvements have not been adopted. (8) The growth of group practice has been retarded by

legal bars and restrictive attitudes. (9) Productivity in the provision of medical care has not been defined and measured. (10) Insufficient attention is given to preventive care and health education. (11) There are insufficient financial incentives to restrain mounting hospital costs while maintaining high quality medical care. (12) Ignorance of quality comparisons or the failure to undertake them has resulted in the purchase of high priced drugs or unnecessary services. (13) There have been unsatisfactory organization of activities at the federal, state and local levels—public and private—in the health field. (14) There are deficiencies in the organization, financing and delivery of health care in the United States.

After reading this series of "problems" Doctor Scott Hendren said, "It is of vital importance that the medical profession make its views known to Secretary Cohen and others in the Health Education and Welfare Department. This can only be done if we have strong and knowledgeable voices at all of the regional conferences he has planned." □

## Ambitious Program Planned By Immunization Committee

Armond H. Start, M.D., Chairman, OSMA Committee on Immunization, mailed this month an immunization schedule to all Oklahoma doctors. "The recommended schedule changes, significantly, the immunization procedures used by many M.D.'s," said Doctor Start, "and conforms to the recommended procedures of the U.S. Public Health Service and American Academy of Pediatrics."

Doctor LeRoy Carpenter, Health Department official who produced the schedule, said it is to be circulated to all health nurses and health officials in the state. "We are particularly happy that the schedule is mutually acceptable to the practicing physician and the Public Health Department," said Carpenter.

"We are making every effort this year to impress on physicians the importance of proper immunization,"

said Doctor Start. "With the combined efforts of our committee and Doctor Carpenter's office, we hope to have the most effective immunization campaign conducted in Oklahoma. We have solicited speaking engagements with every medical society in the state and the initial response has been very good."

In addition to the speaking arrangements, the joint plans call for a concentrated campaign in medical publications in February and an "Immunization Month" campaign in March. The Health Department will conduct the general public effort while the OSMA committee concentrates on physician awareness.

To test the effectiveness of the campaign, Doctor Start's committee plans an "Immunization Booth" at the Annual Meeting of the OSMA in Tulsa. "We'll give shots to those doctors who have failed to properly immunize themselves," Doctor Start said.

Better get **your** shot, Doctor. □

## Editorial . . .

(Continued from page 485)

tainly the immunologic factors constitute one of the important aspects of this disease. The conditions which lead to latency and the fate of the virus during the latent period are obscure. Antigen-antibody reactions are known to initiate inflammatory tissue reactions. After a latent virus has been reactivated, progressive replication and release of viral antigen in the central nervous system may occur establishing favorable conditions for the development of a progressive encephalitis.

The difficulty in virus isolation in this type of encephalitis further suggests that it may represent an example of a slow virus infection, as in the case in certain other central nervous system diseases such as kuru, scrapie and others. Furthermore, a chronic carrier state is now known to occur in a number of virus infections. Examples include the rubella syndromes, cytomegalic inclusion disease and infection with herpes simplex virus.

Dick, Gard, Kolar and others have



well discussed the directions which future efforts must take in order to provide further confirmation of these interesting associations.

These findings which strongly implicate the association between SSPE and measles virus infection are important not only because the techniques employed may lead to an explanation of the cause of other dis-

orders but also may offer a therapeutic approach to this and other diseases. Although puzzling since measles is an RNA virus, use of the antiviral drug, 5-bromo-2-deoxyuridine, an agent specifically designed to interfere with DNA synthesis, in some patients with SSPE has been associated with beneficial results.—*Harris D. Riley, Jr., M.D.* □

## BOOK REVIEWS

**STANDARDS OF CHILD HEALTH CARE.** By Council on Pediatric Practice, American Academy of Pediatrics, P.O. Box 1034, Evanston, Illinois. Paper, 143 pp. Evanston, Illinois: American Academy of Pediatrics, 1967.

In the introduction it is stated, "The purpose of this manual is to present an outline of the comprehensive health care which should be delivered to children of all ages in health and illness," and further "It is estimated that at least 60 per cent of the children in the country are now eligible for some type of government medical care through federal, state or local agencies." This is significant!

The continued decline in the number of general practitioners who formerly provided much of the medical service for children, the growth of pediatric subspecialties, the working mother, the shorter work week affecting parents and physicians and the mobility of the American people are creating present and foreseeable problems in providing pediatric services. The anticipated increase in births in the next ten to 15 years from the "post war" baby boom of the late 40's and early 50's as well as other less well defined changes are unquestionably going to add their impact to the practice of pediatrics.

The manual presents schedules for routine immunization, tuberculin testing, outlines forms for history taking and pediatric records, lists guide lines in physical examination and recommends the necessary equip-

ment for a pediatrician's office as well as that for clinics and hospitals dealing with children. Also it stresses the need for training possibilities and means of obtaining paramedical personnel to do certain portions of the routine pediatric care usually afforded infants and children in offices, clinics and hospitals and presents a plan for available beds for pediatric patients for a few hours in clinics, for special laboratory studies or treatment thus freeing the hospitals of many short stay patients.

There is considerable discussion about grouping pediatricians in general pediatrics and as a group with pediatrics subspecialists included. The suggestion appears that more efficient service may be available by concentrating physicians in large medical complexes the nature of which has not yet assumed a generally acceptable working reality. Quoting: "This could include offices which physicians could rent for their private practice. In addition, there could be facilities for rehabilitative services, including convalescent care for uncorrectable physical defects, mental health clinics, and evaluation centers for the retarded. . . . It is anticipated that these large community facilities could be financed from a variety of sources—federal, state, county, university, and private funds (payments made by private patients, either through insurance programs or personal billing). Arrangements would be made to have patients able to do so pay

their physicians separately. The latter should, however, be adequately compensated by the appropriate agency for services financed by the government." A very complicated and involved plan leading to more controls over the practice of pediatrics.

Though each physician will probably be responsible for the care of more children a large portion of routine procedures will be done by paramedical personnel. We quote: "The pediatrician will still be left with the true core of a physician's work, the diagnosis and management of conditions which require sophisticated medical skill. . . . The physician will deal with much more pathology—physical, medical and emotional—both in children and the parents."

We would agree with that portion of the recommendation which concludes that those physicians in pediatric residency training should have some time in the area of child guidance and that they might profit by experience in the office of pediatricians in private practice.

The idea of establishing a "Medical Home" for the complete pediatric record of each individual patient from birth to adulthood, encompassing every item relating to his health care from the moment of birth, no matter by whom or where rendered seems utterly fantastic and impossible of accomplishment even in the day of advanced computerization.

The book very definitely gives the impression that great changes will occur in rendering children's health care services, with continuing education programs for physicians and parents, the more extensive use of paramedical personnel, enlargement of government services, government controls, and increased development of other forms of insurance.—*George H. Garrison, M.D.*

**THE CLINICAL PATHOLOGY OF INFANCY.** F. William Sunderman, Director, Institute for Clinical Science, Director of Education, Association of Clinical Scien-



tists, Clinical Professor of Medicine, Jefferson Medical College, Philadelphia, Pennsylvania; and F. William Sunderman, Jr., Director of Clinical Laboratories and Associate Professor of Pathology, University of Florida College of Medicine, Gainesville, Florida. 565 pp. illustrated, Springfield, Illinois: C. C. Thomas. 1967.

This book contains the edited proceedings of a seminar on the clinical pathology of infancy held in Washington, D.C., under the auspices of The Association of Clinical Scientists. It is the seventh in a series of such seminars. The book is divided into four major groupings: congenital biochemical disorders in infancy; endocrinology and metabolism in infancy; clinical pathology of systemic diseases in infancy; and cytogenetics in infancy. A total of 67 contributors have written brief and generally useful articles under these four broad headings. In addition to the discussion of the clinical and pathological aspects of various diseases in infancy and childhood the book describes a number of newer procedures of a diagnostic nature which are not found in most current textbooks of clinical pathology. These include such procedures as thin layer chromatography of amino acids and sugars, measurements of pigments in amniotic fluid, measurement of erythrocytic enzymes, estimations of urinary polysaccharides and identification of chromosomal karyotypes. The illustrations and diagrams are of satisfactory technical quality and the references for most chapters are current.

The subject of congenital dysproteinemias is hampered by its brevity. This is in contrast to the chapter entitled the Genetic Errors of Glycogen Metabolism which provides a current and well-done review of this rapidly changing field. The late Mary Efron has contributed three chapters concerning amino acid metabolism and its disorders. A valuable aspect of this book is the review of urinary and chemical norms in infants and children of different ages.

This book will serve as a valuable

reference to personnel in clinical laboratories and to physicians concerned with diagnostic and investigative procedures in infants and children.—*Harris D. Riley, Jr., M.D.*

**PROGRESS IN MEDICAL VIROLOGY, Volume 9.** Edited by J. L. McMelnick. pages xiv plus 496, 53 figures plus 92 tables. New York. \$21.10.

This represents the ninth volume of a series and contains 12 articles concerning a variety of virologic subjects. This volume, as are the others, is written primarily for the virologist but is of value to clinicians seeking up-to-date information in this field. Approximately half of the articles are of the review type and are of definite value as reference works. Bell of Uganda discusses the association of viruses with Burkitt's tumor. The etiologic importance of three viral agents is discussed, but it is still not possible to conclude that the tumor is caused by a virus.

Perhaps the most unusual and interesting review in the entire volume is that of the cat-scratch syndrome by Warwick. In addition to a historical review he discusses the clinical manifestations, epidemiologic and etiologic studies. In the latter category, he reviews well the possible relationship to large virus infections such as psittacosis and members of the lymphopathia-venereum group and to atypical mycobacteria infections. He has assembled a bibliography of no less than 567 references on this relatively little known topic.

Other contributions include an outline of the most recent work on interferon, reviews of virus infections of the newborn, of outbreaks of encephalitis in Houston, Texas and Venezuela and of hemorrhagic fevers of Southeast Asia and South America. There is also a report on virus classification and nomenclature by the International Committee on Nomenclature of Viruses.

This, as are previous volumes in the series, is a useful reference for investigators and physicians interested in virology.—*Harris D. Riley, Jr., M.D.* □

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The

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NOVEMBER  
1968  
Vol. 61, No. 11

of the Oklahoma State Medical Association

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*Nothing else I've tried seems to work, so I decided to give you a crack at it.*



"... he was an omnivorous reader, his editorials were always brief, to the point, and characteristic of the man . . .

"... This dear friend was an industrious man. Work for him was a means to an end. The end attained, the drudgery of the work was forgotten. If it meant denial of recreation he did not hesitate. If it meant sleepless nights and toil and tension, he thought only of the battle to be won . . ."

"... No man could see through ignorance and sham and hypocrisy more quickly than he . . . During his tenure . . . there have been situations in this state that would have led to great wrong and humiliation had it not been for his virile pen, his quick decision and his uncompromising stand for what was right and honorable. He was loyal to his profession just as he was to the principles and integrity in industry and intellectual efficiency . . ."

"... (his) philosophy was that of a physician who was a scholar and a gentleman, but more particularly a humble man . . . rare was the day that he did not have a cheery word or an interesting anecdote to relate to all of us. Others have written of his scientific accomplishments, his literary works, his teachings and his honors, but to those of us who knew him so intimately, he never wore those accomplishments. He only wore the spirit of friendship and understanding . . ." "... most of all we remember him for his kindness and compassion . . . his was a remarkably logical analytical mind and his interests were varied . . . this gentle scholarly man who made the world a little brighter as he passed this way."

"... a true scholar. His breadth of knowledge in so many fields was astonishing . . . he was a prodigious reader, regularly covering the medical literature, all types of history and novels . . . he loved classical music and regularly attended the opera . . . he was the author of more than 75 medical publications . . . of his many fine characteristics one that perhaps stood out over all others was his love for people. He was able to find something good in every person he knew . . . He was fascinated by young people and had great confidence that the future of this country was in excellent hands . . ."

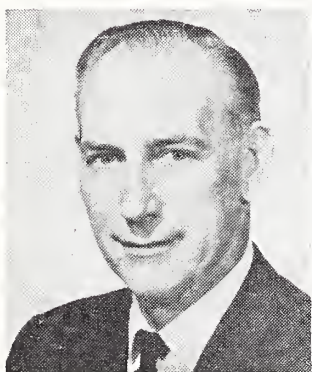
These impressive statements have several things in common: They were written by physicians about physicians. They describe particular characteristics of men who served as Editors of *The Journal of the Oklahoma State Medical Association*. The words and the men who inspired them belong to history.

Certainly you can appreciate, as I do, the magnitude of the challenge offered by these great men: Doctor Claude Allen Thompson, Doctor Lewis Jefferson Moorman, Doctor C. B. Dawson, and Doctor Ben H. Nicholson. In this list of Journal Editors the name of Doctor W. W. Rucks, Jr. also belongs, greatly adding to the continuum of service, skill and devotion created by these gentle, scholarly physicians. For a period of almost 50 years they joined their lives and provided the leadership, initiative, wisdom and talent which has resulted in bringing to us, in this issue and in this point in time, a medical journal which is recognized, nationwide, as one of the best.

To say that I approach my task with humility would be more than trite; it would be a gross understatement of what I really feel. I am humbled by the lives of the men who have preceded me in this job. I am awed by the responsibility for continuing their work while possessing so little of their talents. I am grateful for the opportunity to serve my colleagues, my mentors and my community in this challenging and rewarding capacity. It is through the study of history that we gain the humility, wisdom and understanding which are indispensable in the development of plans for the future. As I reviewed the history of our *Journal* and reflected upon the lives of its Editors I became enthusiastic about our future: It is always easier to build an enduring structure upon a strong foundation. Certainly no one of us alone can accomplish the task, but together we can make certain that tomorrow's accomplishments will be worthy of yesterday's sacrifices.

Let's get on with it.—M.R.J. □





In a recent letter to the physicians of Oklahoma from the Department of Public Welfare, the following opinion of the Judicial Council of the AMA (1965) was quoted:

"When a physician assumes the responsibility for the services rendered to a patient by a resident or intern, the physician may ethically bill the patient for services which were performed under the physician's personal observation, direction or supervision."

This opinion was reaffirmed in the report of the council on medical service adopted by the House of Delegates in June 1967 as well as by the adoption of a resolution to the effect that the professional responsibility of an attending physician for services rendered by an intern or resident implies personal supervision and direction on the physician's part in order to be considered identifiable and compensable services.

These actions of the AMA House of Delegates support the position of the Department of Public Welfare that payment made by the department will follow these guidelines.

Sincerely yours,

*Scott Henderson, M.D.*



## Congenital Anomalies Secondary to Maternal Drug Ingestion

JOHN M. SHANE, M.D.\*

*Congenital malformations now constitute a major health problem. Environmental influences are becoming increasingly important in the etiology of congenital anomalies. This paper provides a comprehensive review of the relations of drug ingestion during pregnancy to congenital anomalies in the infant.*

TO A COUPLE desirous of having children, especially one which has encountered difficulties with conception, no greater tragedy can occur than the birth of an infant with congenital anomalies. Major anomalies are frequent. They are recognized in the newborn period in 0.75 to 3.3 per cent of live births and in as many as 7.5 per cent of infants by the end of the first year of life.<sup>14, 19, 25, 26, 35, 36, 39, 41</sup> The discrepancy in the figure for newborns is related to differences in criteria as to what constitutes an

important anomaly and to observations carried out on populations with different racial characteristics.<sup>35, 38</sup> The percentage at one year includes minor defects and additional malformations not detected at birth, but does not include inherited metabolic abnormalities which may not declare themselves until later.

Congenital malformations can result from the action of any one of numerous mechanisms: some heritable, such as autosomal abnormalities (*e.g.*, Down's syndrome and Patau's syndrome), sex chromosome abnormalities (*e.g.*, Klinefelter's and Turner's syndromes) and abnormalities of the genes (*e.g.*, cystic fibrosis, testicular feminization, albinism); idiopathic genetic mutations; and accidents of the maternal environment including infections (*e.g.*, rubella, toxoplasmosis, syphilis), radiation, hypoxia, nutritional deficiencies (*e.g.*, folic acid, iodine), and ingested drugs.

The last of these causes, maternal drug ingestion, is preventable and consequently of particular importance to the physician.

"On the basis of present knowledge, the placenta behaves toward most drugs as an inert barrier with lipid properties. Accordingly, any lipid soluble drug will readily penetrate the placental barrier,"<sup>9</sup> unless of

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\*This article was prepared by a Senior Medical Student during the fourth year Clerkship in Pediatrics.



a molecular weight greater than 1000.<sup>28</sup> As fate would have it, a majority of the drugs used in therapy readily cross the placenta. Some exceptions include the highly ionized muscle relaxants<sup>28</sup> (*e.g.*, succinyl choline) and certain polypeptide hormones<sup>5</sup> (*e.g.*, TSH).

While knowledge of placental permeability and the effect of certain maternally ingested drugs on the fetus has long been known, not until the early 1960's did awareness of possible teratogenetic effects from maternal drug ingestion become wide spread. The sudden tragic eruption of this knowledge had been presaged by letters appearing in medical journals and private communications, such as the following: "In recent months I have observed that the incidence of multiple severe anomalies in babies delivered of women who were given the drug thalidomide during pregnancy, as an antiemetic or as a sedative, to be almost 20 per cent. Bony development seems to be affected in a very striking manner, resulting in polydactyly, syndactyly, and failure of development of long bones. Have any of your readers seen similar abnormalities in babies delivered of women who have taken this drug during pregnancy?"<sup>24</sup>

Despite the implication of the thalidomide scare that other maternally ingested drugs might have deleterious effects on the developing fetus, it has nonetheless been observed that 92 per cent of women have at least one drug prescribed by physicians during the gestational period, and 3.0 per cent are given ten or more.<sup>29</sup> In addition a variety of drugs are prescribed early in gestation for women before either they or their physician are aware of a pregnancy—when, unfortunately, the fetus may be most vulnerable to the possible adverse effect of pharmacological agents.

Inasmuch as knowledge of the effect of drugs on animal fetuses cannot be extended to the human, the safety of a drug ingested by the human mother cannot be assured by prior experimentation. In reference to the thalidomide tragedy, for example, a retrospective clinical investigation in 1962, concluding that this supposedly harmless drug was responsible for fetal abnormalities in

patients who had taken small doses during their early pregnancies, was sharply challenged by investigators who showed that the administration of the drug to pregnant rats resulted in no fetal malformations.<sup>36</sup> It was not demonstrated until almost one year later that the teratogenic action of thalidomide is dependent on species and even strain differences in experimental animals.<sup>6, 21</sup>

Experiments on animals have, however, uncovered a variety of factors which presumably have application to the developing human fetus, even though the observation of specific drug effects cannot necessarily be extended beyond the animal strain observed.<sup>20</sup> The products of drug metabolism vary from species to species. The teratogenic dose of a drug may be critical, having to be balanced between that amount which on the one hand produces no effect and on the other may abort the conceptus. The simultaneous administration of other pharmacologically active agents without teratogenic action of their own may alter the teratogenicity of a known offending substance for better or worse.<sup>43</sup> Maternal weight and diet may alter drug action on the fetus.<sup>10</sup> A variety of quite different agents may produce the same phenocopy,<sup>40</sup> *e.g.*, polydactyly resulting both from maternal drug ingestion and genetic predisposition; in such situations the true cause may not be recognized. The stage of gestation during which the drug is administered is vitally important (*vide infra*).<sup>9</sup>

The effect of a drug with unquestionable teratogenic properties may, in humans as well as animals, be masked or enhanced according to individual susceptibility. Referring again to the thalidomide disaster, since it is so well documented, over 50 per cent (most likely closer to 80 per cent) of the mothers who took the drug gave birth to apparently normal children. To what is the difference in the susceptibility of fetuses in this unaffected group to be ascribed? The ef-

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## MATERNAL MEDICATION

Acetophenetidin (Phenecetin<sup>R</sup> 1)  
 Androgens<sup>16</sup>  
 Antihistamines<sup>3</sup>  
 Bishydroxycoumarin<sup>15, 34</sup>  
 Chlorambucil<sup>3</sup>  
 Chloramphenicol<sup>3</sup>  
 Corticosteroids<sup>1, 3, 8, 31</sup>  
 Cortisone<sup>8, 12, 18, 31</sup>  
 Erythromycin<sup>3</sup>  
 Ethyl bicomacetate<sup>3, 15, 34</sup>  
 Estrogen<sup>1, 7</sup>  
 Heroin and Morphine<sup>1, 22, 37</sup>  
 Hexamethonium bromide<sup>1, 3</sup>  
 Intravenous fluids (used improperly)<sup>3</sup>  
 Lysergic-acid diethylamide<sup>2, 17</sup> (LSD)  
 Meproamate<sup>3</sup>  
 Methotrexate<sup>3</sup>  
 Nitrofurantoin<sup>3</sup>  
 Novobiocin sodium<sup>3</sup>  
 Phenmatrazine (Preludin<sup>R</sup>)  
 Phenobarbital (in excess)<sup>3</sup>  
 Phenformin<sup>3</sup>  
 Potassium iodide<sup>30</sup>  
 Progestins<sup>42</sup>  
 Prophylthiouracil<sup>4, 13</sup>  
 Radioactive Isotopes  
 Reserpine<sup>11</sup>  
 Salicylates (Large amounts)<sup>3</sup>  
 Smallpox vaccination<sup>3</sup>  
 Smoking<sup>3</sup>  
 Sodium aminopterin<sup>3</sup>  
 Streptomycin<sup>1</sup>  
 Sulfonamide (esp. long acting)<sup>1, 3</sup>  
 Sulphonylurea derivatives  
 Tetracyclines<sup>3</sup>  
 Thalidomide<sup>21, 24, 36</sup>  
 Thiazide diuretics<sup>33</sup>  
 Vitamin K analogues (excess)<sup>3</sup>  
 Warfarin<sup>3, 15</sup>

## REPORTED FETAL OR NEONATAL EFFECT

Methemoglobinemia  
 Masculinization and advanced bone age  
 Anomalies (?) Infertility (?)  
 Hemorrhage  
 Multiple anomalies and abortion  
 "Grey" Syndrome, death  
 Neonatal adrenal cortical failure  
 Cleft palate  
 Liver damage (?)  
 Hemorrhage  
 Masculinization  
 Respiratory depression, *in utero* addiction  
 Neonatal ileus  
 Electrolyte abnormalities  
 Megacolon, chromosomal breakage  
 Retarded development (?)  
 Multiple anomalies and abortion  
 Hemolysis  
 Hyperbilirubinemia  
 Bochalek hernias—Left lung hypoplasia (secondary to hernia)  
 Neonatal bleeding, death  
 Lactic Acidosis (?)  
 Goiter and mental retardation—airway obstruction secondary to goiter  
 Masculinization, advanced bone age  
 Hypothyroidism, Hyperthyroidism  
 Various anomalies (e.g. I<sup>131</sup> and congenital hypothyroidism)  
 Lethargy, bradycardia, hypothermia, nasal congestion  
 Neonatal bleeding  
 Fetal vaccinia  
 Small babies  
 Multiple anomalies, and abortion  
 Possible 8th nerve deafness  
 Hyperbilirubinemia  
 Anomalies (?), neonatal hypoglycemia  
 Inhibition of bone growth, discoloration of teeth  
 Phocomella, hearing loss, death  
 Thrombocytopenia  
 Hyperbilirubinemia  
 Hemorrhage

fect of paternal or maternal genes? To total genetic endowment? The answers to these questions are not yet forthcoming.<sup>3</sup>

In order to alter organogenesis an offending drug must be administered before the organ is formed. In early embryogenesis each anatomical structure is developed from a primitive anlage and subsequently modified by various incompletely defined local and systemic inducer and inhibitor substances. Thus, each stage in structural differentiation is dependent upon the preceding one. The sequences occur according to a specific biological pattern with only minor variations among individuals. A classic example in the human is the formation of the lens of the eye from the cells contiguous with the optic vesicle.<sup>23</sup> The optic vesicle develops about 24 days after conception (3 mm. stage), the lens primordium appears at 38

days (3.5 mm.), and the lens becomes a solid structure at 49 days (20 mm.). Thus, if a hypothetical drug were to produce aphacia (absence of the lens) it would have to be administered before the 28th day of gestation. Similar "time tables" have been constructed for most human organ systems.<sup>27, 32</sup>

In the "time table" of overall development, the human form is essentially complete, except for refinements, by the end of the first trimester. In addition, the most active metabolism and cell division have occurred during this period.<sup>4</sup> From this knowledge it can be assumed—and indeed has been demonstrated—that these 13 weeks of organogenesis are the period of greatest fetal vulnerability to the adverse effects of teratogenic drugs. Exception to this generalization is noted in certain endocrinopathies and in interference with enzyme systems which do



not attain their critical stage of development until the second or third trimester. At this writing neither the mechanism of interference nor the specificity of a teratogen for a particular organ or enzyme system is known.

From the foregoing discussion it is clear why virtually all our present knowledge of the teratogenetic activity of drugs is derived from empirical clinical observations. Now that physicians are sensitive to the possibility of adverse drug effects, the list of drugs producing fetal damages is rapidly growing.

Medication during pregnancy should be prescribed only on clear indication, avoiding known offenders, especially during the first trimester but not forgetting that many drugs are dangerous also in the second and third trimesters, particularly when hormonal or enzymatic systems are involved. Even more fundamentally, all drugs should be used cautiously in any woman of child-bearing age, so as to avoid damaging a conceptus not known to be present, but in a critical stage of development.

A representative list of known and suspected teratogens are presented on the previous page.

#### ACKNOWLEDGMENT

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# Peutz-Jeghers Syndrome--

## A Diagnostic and Therapeutic Dilemma,

### Case Report and Review of the Literature

WILLIAM R. BERNELL, M.D.

*The diagnosis and prognosis of gastrointestinal tumors is usually based upon the tumor's microscopic appearance; but not so with the tumors of Peutz-Jeghers syndrome.*

PEUTZ, IN 1929, first described in Dutch literature what today is known as the Peutz-Jeghers syndrome.<sup>11</sup> He reported a case of "familial polyposis of the . . . intestinal tract and nasopharynx, accompanied by peculiar pigmentation of the skin and mucous membranes." Further cases were not reported and the syndrome itself was not named until Jeghers, McKusick, and Katz reported a series of cases in 1949, and brought it to worldwide recognition.<sup>6</sup>

The Peutz-Jeghers syndrome is currently defined as multiple intestinal polyps occurring from the gastroesophageal junction to the anus, particularly in the small bowel, accompanied by small, flat, melanotic "freckles" around the mouth, hands, and on the mucous membranes of the mouth.<sup>6</sup> The "freckles" usually occur sometime during the first year of life, but the polyps may oc-

cur at anytime during the next 30 years. The most frequent problem of patients with Peutz-Jeghers syndrome is that of intussusception of the small bowel. Until 1957 it was thought that the polyps of Peutz-Jeghers syndrome, like many other familial polyps, were pre-malignant. However, since then, statistical evaluation of 200 patients has indicated that less than 2.5 per cent of these patients with lower small bowel and colon polyps have malignant polyps.<sup>2</sup> On the basis of this statistic, it is imperative that the Peutz-Jeghers syndrome be recognized because the prognosis and surgical treatment are different from that of other types of intestinal polyposis.

Reported here is a detailed history of a family with Peutz-Jeghers syndrome, one of whose members presented herself at the University of Oklahoma Medical Center in October, 1967.

#### CASE SUMMARY

The 30-year-old proband in this case presented herself to the Surgical Service on 28 October 1967 with a chief complaint of "Peutz-Jeghers syndrome." She complained of intermittent, cramping abdominal pain and borborygmi, but not bleeding from the rectum. The illness began when her mother was hospitalized at the University of Washington Medical Center, Seattle, Washington, for Peutz-Jeghers syndrome.<sup>12</sup> (See Family

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History) At the same time, the patient was also studied for Peutz-Jeghers syndrome, and it was shown that she did have it.<sup>9,11</sup> At the age of 22 she had a cholecystectomy, exploration of the common duct, and an appendectomy. At that time the stomach and duodenum were "negative to palpation," and the descending colon had at least two polypoid lesions, the largest approximately one cm. in diameter. In 1960 she was readmitted and underwent "multiple colotomy and coloscopy; excision of multiple polyps in the left colon; multiple small bowel enterostomies with removal of multiple polyps; bilateral partial resection of the fallopian tubes."

In 1964, she was again admitted for "resection of multiple polyps from the small bowel, lysis of adhesions, Cantor tube intubation of the small intestine." At this time distinct polypoid lesions were palpated at three different levels of the small bowel and removed. The colon was carefully palpated and inspected, but no colotomy was done. There were multiple small tumor masses within the lumen of the stomach. Histologic examination at that time showed "multiple benign adenomatous polyps."

*Family History:* The patient's mother was admitted to the University of Washington Medical Center in 1964 for partial intestinal obstruction. Previously, in 1949, she had a resection of 25 inches of bowel for intussusception due to polyposis, and at that time she complained of mild obstipation and left quadrant pain. On physical examination, black circumoral spots were noted, and there was tenderness over the umbilicus. She had an exploratory laparotomy with removal of numerous polyps, one of which is described microscopically as follows: "The glands comprising this particular polyp are quite irregular and formed of, and lined by, moderately atypical cells with large vesicular nuclei showing nuclear polarity loss, hyperchromatism to vesiculation and increased mitoses. The stroma of this polyp shows infiltration, but the base of the stalk is not included in the slide, and thus it is impossible to know whether actual invasion of the rectosigmoid wall has occurred or not." The final diagnosis was Grade I adenocarcinoma

occurring in a rectosigmoid polyp. The histologic slides of this specimen were interpreted by the University of Oklahoma Department of Pathology as follows: "Adenomatous polyp of the rectosigmoid. There is no evidence of malignancy. These have been reviewed by the chief of pathology who concurs with this diagnosis." In 1960 the patient's mother was again hospitalized and underwent exploratory laparotomy, and the report of "heterotopic small intestine glands showing mucoid degeneration in the muscle wall and subserosa of the small bowel found in a polyp removed from the *colon*" was made. The slides also contained another specimen which showed both "glands present deep within the muscularis and pools of mucous. The cells lining these glands are very regular. The changes are similar to those seen in colitis cystica profunda, and are consistent with a hamartoma. There is no evidence of malignancy." This slide was also reviewed by the University of Oklahoma Department of Pathology, and they concurred that this was small intestinal mucosa in a large intestinal polyp. In 1968 the patient's mother had a radical mastectomy for carcinoma of the breast. We have no further follow up on her polyposis.

The patient has a half brother who is reported to have pigmentation of the oral mucosa, but roentgenographic studies did not show intestinal polyps at the age of 19.<sup>12</sup>

The patient has two living children, one a six-year-old female who has definite oral manifestations of Peutz-Jeghers syndrome and complains of frequent crampy abdominal pain and loud borborygmi, but has had no blood from the rectum. She had a barium enema on 13 June 1961, with the report: "At this time I feel that we can exclude any but the smallest polyps with some reservation as to the cecal region." The second of the patient's living children is adopted and, therefore, excluded from this study. The patient has also had one son, born at the University Hospitals in Oklahoma City, who at birth was affected with multiple congenital abnormalities including microphthalmus, greatly deformed extremities, and bilateral fractured femurs. He lived five days and expired while in the hospital. No autopsy was obtained.

There is evidence that other members in



the family died in their early twenties and thirties from unknown causes; none were definitely attributable to bowel problems or polyps. No autopsies were obtained on any of these people so far as we can ascertain.

*Physical Examination:* At the time of admission her vital signs were within normal limits; her blood pressure was 140/72 mm. Hg. The patient had oral, labial, and buccal mucosal flat, pigmented areas approximately one by one mm. Similar pigmented areas were also seen across the skin creases of her palms and fingers. Her chest and cardiovascular systems were within normal limits as were her abdominal and pelvic examinations. Proctoscopic examination to 25 cm. showed a gray, friable mucosa from 20 to 25 cm. which on biopsy the pathologist considered within normal limits. There were two, two by two mm. sessile polyps at 15 cm., one two by two mm. sessile polyp at ten cm., and three at eight cm. These were biopsied and reported as "adenomatous polyps of the colon." Stool guaiac was negative for occult blood.

*Hospital Course:* In November 1967, the patient underwent exploratory laparotomy, partial colectomy, and removal of that part of the colon containing polyps, and a gastric polyp through gastrotomy. Histologic study of the colon polyps was "adenomatous polyps of the transverse colon." The polyp removed from the stomach showed "well-differentiated adenocarcinoma of the stomach with extension to the subserosa." Microscopically, this showed glandular tissue underneath the muscularis and in the subserosal tissues of the stomach. Her postoperative course was satisfactory, and she was discharged from the hospital on the tenth postoperative day without medication. In the future this patient should be gastroscoped and have upper gastrointestinal series frequently to follow her gastric lesion in the event that it is biologically, as well as histologically, malignant.

#### COMMENT AND REVIEW OF LITERATURE

In the literature, it is interesting to note that forme fruste exist in this disease, consisting of freckles and perioral manifestations of the disease without gastrointestinal polyposis.<sup>1</sup> However, the reverse has not

been reported—polyposis without perioral manifestations.

The sites of the intestinal polyps are reported by Batholomew, *et al.*: 96.2 per cent of patients with Peutz-Jeghers syndrome have polyps in the small bowel, 30.8 per cent have them in the rectum, 29 per cent in the colon, 24.2 per cent in the stomach, and 2.7 per cent in the appendix. The circumoral and lip pigmentations occur in 95.6 per cent of the patients with Peutz-Jeghers syndrome, while 83 per cent have it also on the buccal mucosa, 31.9 per cent on the extremities, and 36.3 per cent have pigmentation around the other facial orifices. Genetically, the disease is transmitted as an autosomal dominant.

Three cases out of approximately 200 cases reported had concomitant ovarian tumors.<sup>3</sup>

In 1962, Michalany, *et al.*,<sup>8</sup> reported that the cell types and structure of the polyps are "similar to that of the normal intestinal segments from which they originated." We believe this is the first recorded case of heterotopic small intestinal mucosa reported.

Symptoms rarely develop in childhood. There are four "children" (ages unknown) in Dormandy's series.<sup>12</sup> Fisher<sup>13</sup> reported one in 1951 whose symptoms developed at seven. In 1953, Buckstein<sup>13</sup> reported a six-year-old child with melanotic "freckles" and one polyp. Because of the borborygmi, crampy pains, and oral manifestations, we assume that the six-year-old daughter of our patient has active Peutz-Jeghers syndrome at this time.

In 1957, before the hamartomatous nature of this disease was elucidated, Bailey<sup>10</sup> interpreted 24 per cent of 61 cases of Peutz-Jeghers syndrome as histologically malignant. It is interesting that, until 1962, no cases were reported where the "carcinoma" of Peutz-Jeghers syndrome had metastasized. In 1962, Morrison<sup>5</sup> reported a patient who had a duodenal polyp with cancerous

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changes and lymphatic metastases, but this was not the cause of death in his patient. Since then, a total of five patients have been reported with Peutz-Jeghers syndrome who have died from metastatic disease secondary to gastrointestinal carcinoma, although there are more than 200 reported cases. It is interesting that of these five, four were in the stomach or duodenum; Bailey reported one case of carcinoma of the rectum in a patient with Peutz-Jeghers syndrome who died from metastatic disease. This aspect of the syndrome is superbly summarized by Beck, *et al.*<sup>2</sup>

According to Beck, *et al.*, the recommended treatment of patients with Peutz-Jeghers syndrome consists of conservative surgical management with removal of a minimum amount of intestine, removal of only symptomatic polyps in the small intestine and colon, and prophylactic removal of all polyps in the stomach and duodenum. The reason is that the patients will probably have to undergo several operations during their lifetimes for intestinal obstruction or intussusception, and every effort should be made to conserve as much bowel as possible. The incidence of malignancy in polyps in the stomach and duodenum makes it mandatory that

these polyps be removed as soon as they are detected.

## SUMMARY

A patient with Peutz-Jeghers syndrome is presented along with a brief review of the literature. □

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# The Contributions of B. F. Fortner, LeRoy Long and Other Early Surgeons in Oklahoma

R. PALMER HOWARD, M.D.  
RICHARD E. MARTIN, B.S.

*An adventure in regional medical history until the University Medical School was soundly established in Oklahoma City in 1928 under the respected surgeon and Dean, LeRoy Long.*

THE GROWTH of the medical profession and its surgical specialty in Oklahoma has similarities to that of a field crop, for it has depended upon the soil, the climate and the cultivators. For soil let us consider the geographic location and population; for climate, the cultural, political and educational influences; and for the cultivators, the medical practitioners.

From 1828 to 1863 the Indian Territory was a remote region. The population consisted of the full and mixed-blood citizens of the Five Civilized Nations. These tribes were in no sense a backward primitive people, for their constitutions and laws, schools, customs and standards of living were comparable to those of their neighbors in the southwestern states, Arkansas and Texas. However, Indian Territory was too isolated to attract physicians and surgeons. Hence the problems of health and injury fell to the Indian medicine men, the occasional mis-

sionaries, and the few government physicians and military post surgeons. Services of the latter, however, were restricted principally to the federal personnel.

The relative tranquility in legislative and economic matters was broken by the War between the States. Soldiers in the nearby federal posts and the government advisors to the Indian nations were withdrawn from the Territory. In this situation opinions in the tribal councils were divided. Their southern traditions and sympathies led them to declare for the Confederacy, although groups of Indians of the Five Nations fought on each side. The result was economic and legislative chaos with considerable loss of life and property.

After the war the federal government imposed new treaties on the Five Nations; the terms included further territorial encroachments, and permission for railroad development across the territory.<sup>1</sup> America was on the move west and southwest. Coach roads were now replaced by railways, which made available for commercial exploitation the coal and lumber resources in the southeastern part of the territory. With these developments came thousands of newcomers, both managers and skilled workers from the older states, and unskilled labor from Europe and elsewhere. Both the geographic isolation and the makeup of the population gradually changed. However, the conservative and southern attitude of the native Indian and intermarried citizens prevailed, an attitude doubtful and suspicious of control by the federal government and the moneyed interests of the east.

Presented at the annual meeting of the Oklahoma Chapter of the American College of Surgeons at Norman, Oklahoma, September 24th, 1967.



Some "regular" physicians (*i.e.*, graduates from colleges teaching the orthodox practice of medicine) were employed by the railroad and mining companies. Quacks and "irregular" doctors (diplomates from schools teaching various health cults or from correspondence schools, or men who had merely read medical books) were attracted to the territory, especially to the more isolated areas. The push of an expanding population and the hard times in the southeastern states in the reconstruction period also led medical graduates from colleges in Kentucky and Tennessee to try their luck in Indian Territory. Many settled in the towns on the Missouri, Kansas and Texas Railroad;<sup>1</sup> (pp. 244, 261) Vinita, Muskogee, McAlester, Atoka; and in other towns such as Tahlequah and Lehigh.<sup>2</sup>

The early physicians usually were young, single men, and the laws of each Indian Nation denied ownership of property to any but their own citizens. Consequently, a number of the men, including B. F. Fortner,<sup>3</sup> F. B. Fite<sup>4</sup> and LeRoy Long,<sup>5</sup> who chose to settle permanently in the territory, acquired citizenship in an Indian Nation through marriage. A few others, such as F. S. Clinton<sup>6</sup> and E. N. Wright,<sup>7</sup> were citizens by birth.

The runs into the western undeveloped regions of Oklahoma Territory from 1889 through 1906 brought an influx of pioneer farmers, cattlemen, traders, speculators, and doctors. The majority came from northern states such as Kansas, while many others came from neighboring southern states. The newcomers brought vigorous traditions of the American pioneer with their roots in the older civilizations of Europe and Asia.

Blending of the new people with the Indians of the plains, and especially with the more civilized Indian and intermarried citizens of the Indian Nations, resulted in an Oklahoman of self-reliance and ambitious vigor. These qualities flow forth today to stimulate the more recent arrivals to the state.

The increase of population after 1889 brought political ambitions, which culminated in statehood in 1907. These political advances were paralleled by an expansion

of the educational system to the college, university and finally medical school levels. In addition to local factors, medicine itself was undergoing revolutionary changes as a result of scientific and industrial developments. Physiology, chemistry, bacteriology and pathology were advancing rapidly in Europe and the eastern states in the decades before and after the "run" of 1889. The new knowledge in these basic health sciences was followed by many technical applications. Thus, medical practice was drastically changed by the introduction of anesthesia; antiseptic and aseptic principles of surgery; intravenous infusions; vaccinations, immunizations and better public health regulations; radiological procedures; and more specific medications for infectious and other diseases. These developments gradually influenced medical and surgical practices in Oklahoma, and required better equipped hospitals and new methods of teaching. The state responded to these demands by establishing and gradually expanding the University of Oklahoma Medical School and Hospitals. The opening of the new medical school building in 1928 in Oklahoma City permitted the transfer of pre-clinical teaching from the main campus at Norman. This event was a milestone in Oklahoma medical education.

Preceding the growth of the medical school and forming its basic support was the progressive improvement in the practice of medicine and surgery in Oklahoma. Important influences came through the organiza-

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*When work was done on this paper, Richard E. Martin, B.S., was a second-year student at the University of Oklahoma School of Medicine.*



tion of the Indian and Oklahoma Territory Medical Associations. These societies joined to form the Oklahoma State Medical Association in 1906.<sup>8</sup> Professional contacts with men in Missouri, Kansas, Arkansas and Texas were also promoted by the formation in 1906 of the Medical Association of the Southwest. Finally, after 1913 members of the American College of Surgeons exerted an increasing influence in Oklahoma.

All leaders of the medical profession in this nation and state were by no means surgeons. However, in the period up to 1928 in Oklahoma, B. F. Fortner, F. B. Fite, A. L. Blesh, F. S. Clinton, F. H. Clark and LeRoy Long were surgeons and outstanding leaders. In these decades E. O. Barker, A. K. West, John Duke, L. J. Moorman and E. S. Lain also were influential, but attention will be focused on contributions from surgeons, especially those of Benjamin Fortner and LeRoy Long.

#### BENJAMIN FRANKLIN FORTNER

Benjamin F. Fortner<sup>3</sup> was a man of imposing appearance (figure 1), and well deserved his reputation as an outstanding doctor in the early history of Oklahoma. His parents came from Kentucky and settled near Dallas, Texas, where he was born August 15, 1847. His schooling was interrupted by service in the Confederate Army. In 1872 he graduated from the Medical Department of the University of Nashville<sup>9</sup> (a forerunner of the University of Tennessee). His early years of practice were in Arkansas, where he married a young woman of Cherokee descent, Lucy Jennie Gunter. From 1879 to 1882 Fortner practiced in the Cherokee Nation at Claremore and re-established himself at Vinita in 1884. With the exception of the years 1907-1911, when he was in charge of the Frisco Railroad Hospital at Springfield, Missouri, he practiced in Vinita until shortly before his death<sup>10</sup> from a heart attack at the age of 70, September 23, 1917.

His professional career spanned the relatively crude medical practice in the Cherokee and other nations of Indian Territory to the emergence of modern medicine. Great strides were made in the medical licensure,



Figure 1. Doctor Benjamin F. Fortner. (Courtesy of his daughter Grace, Mrs. O. L. Rider.)

ethics, medical organization, hospital facilities and public health services. Fortner deserves much of the credit for these profound changes. He was the moving spirit behind founding the Indian Territory Medical Association in 1881. When he left the territory in 1882 the association virtually collapsed.<sup>11</sup> After his return, he reorganized it successfully at Muskogee in June 1889. He was elected president in 1881, 1889 and 1890.<sup>9, 11</sup> In recognition of his long and eminent leadership in the organization of the profession and his contributions to the amalgamation of the territorial societies, he was elected the first president of the united Oklahoma State Medical Association in 1906.<sup>8, 12</sup>

The original minutes<sup>9</sup> of the Indian Territory Medical Association from 1881 through 1902 reveal his tireless efforts. He was



chairman of the first Committee on Constitution, and in 1901 he was appointed with F. S. Clinton and LeRoy Long to rewrite the constitution in conformity with the American Medical Association and to provide for subsidiary district societies.<sup>13</sup> He represented the medical society on many occasions in its efforts to influence governors of the Five Nations and the federal government to raise standards of the laws regulating practice. His deep concern for professional ethics is indicated by the distribution of the Code of Ethics of the American Medical Association to all members of the Indian Territory Medical Association in 1889 and 1895,<sup>9</sup> by comments in his Presidential Addresses,<sup>9</sup> (p. 44),<sup>14</sup> and by the initiation during his presidency of a Judicial Council of five members elected for staggered terms to handle disputes and charges.<sup>9</sup> (p. 49) Fortner was elected to the first Judicial Council in 1891. Despite the fact that the minutes reveal several cases involving prominent members,<sup>9</sup> (pp. 50-80) some of whom were expelled for unprofessional conduct, he was re-elected to succeed himself in 1896 and in 1901.<sup>13</sup> (pp. 30, 106) Surely his selection was testimony to his forthrightness and his wisdom. Fortner was an initial member of the Credentials Committee<sup>9</sup> (p. 19) and was frequently reappointed.<sup>9, 13</sup> From 1889 this committee followed the guidelines of the American Medical Association and accepted only those doctors with degrees from approved medical colleges.<sup>9</sup> (p. 21),<sup>13</sup> (pp. 7, 115) Indeed, although graduates from eclectic schools and other "irregulars" were licensed by the territorial and even the early state examining boards, neither eclectic physicians nor regular physicians in partnership with them could hold membership in the Indian Territory Medical Association.<sup>13</sup> (pp. 64-73) In 1896 Fortner suggested that delegates be elected to attend the annual meeting of the American Medical Association,<sup>13</sup> (p. 40) and he appears to have been a leader in developing the affiliation of the two associations.

Without doubt Fortner's contemporaries considered him the most prominent surgeon in Indian Territory. He was surgeon for the Missouri, Kansas and Texas, and the St. Louis and San Francisco Railroads, and a member of the American Association of

Railway Surgeons.<sup>3</sup> His practice, however, covered all fields, including obstetrics, for he attended the wife of his fellow surgeon, F. B. Fite.

Fortner read many papers at the association meetings. The secretaries usually commended his contributions. Among the discussants one finds such distinguished guest surgeons as Emory Lanphear of St. Louis<sup>9</sup> (p. 68) and Jabez N. Jackson<sup>13</sup> (p. 103),<sup>15</sup> and H. E. Pearse<sup>16</sup> of Kansas City. In addition, Fortner was a frequent commentator on the papers of visiting surgeons and of such local members as Fite, Wright, Long and Clinton. Sometimes clinical cases involving abdominal operations or amputations were presented for advice regarding the appropriate surgical technique. On such occasions Fortner's opinion was always sought and respected. His own contributions from 1889 to 1910 frequently concerned abdominal and gynecological surgery and the management of head injuries, but ranged over many fields of practice and medical legislation.<sup>9, 13-18</sup>

Through his efforts and those of the men he inspired, all aspects of medicine advanced and the public health improved. The minutes of 1900 and 1901<sup>13</sup> (pp. 98, 107) reveal that he was preparing a history of the Indian Territory Medical Association but it does not appear that he completed the task. Yet looking back 50 years after his death, the profession today honors him as a highly respected physician and surgeon, the father of organized medicine in this state, and an inspiring leader of men.

FRANCIS BARTOW FITE

Francis B. Fite was born in Georgia, October 17, 1861.<sup>4</sup> His father was a doctor. At the age of 19 he joined his brother, Doctor Richard L. Fite in Tahlequah, Indian Territory. He graduated from Southern Medical College, Atlanta, Georgia in 1886. Subsequently he spent a year with Doctor John Wyeth in New York City, where he assisted his teacher during the first applications of "Wyeth pins" for amputations through the shoulder and hip joints. Doctor Fite practiced in Muskogee from 1889 and was the surgeon for the Missouri, Kansas and Texas Railroad. He was active in the Indian Ter-



ritory Medical Association (president 1893-1894)<sup>9</sup> (p. 67),<sup>11</sup> and the Oklahoma State and American Medical Associations. He was a Fellow of the American College of Surgeons,<sup>19</sup> a distinction achieved also by his sons, William Patton Fite and E. Halsell Fite, and by two grandsons. Fite served on Territorial and State Boards of Medical Examiners and on the Oklahoma State Board of Education. He died August 13, 1938.<sup>20</sup> In addition to his own contributions to the profession, he must be remembered for his important role in the selection of LeRoy Long as Dean of the University of Oklahoma Medical School in 1915.

#### ABRAHAM LINCOLN BLESCH

Abraham L. Blesh was born in Pennsylvania, January 6, 1866, and graduated from Northwestern University Medical School in 1889. He spent a year in Vienna before entering general practice in Kansas. He moved to Guthrie, Oklahoma Territory in 1893.<sup>21</sup> In 1902 he spent several months with Doctor Howard A. Kelly at the Johns Hopkins University School of Medicine, and later visited the surgical clinics of Murphy and Ochsner in Chicago and of Mayo in Rochester. He was active in the Oklahoma Territory Medical Association (president 1903),<sup>22</sup> the Oklahoma State Medical Association and the Medical Association of the Southwest (president 1911).<sup>23</sup> Blesh moved to Oklahoma City in 1911 and became Chief Surgeon at the Oklahoma City Clinic and Wesley Hospital. He was Associate Professor of Surgery at the University of Oklahoma Medical School from 1912. He was the only Oklahoman among the founding Fellows of the American College of Surgeons.<sup>24</sup> Blesh was highly regarded as a skillful operator in general surgery. He died February 20, 1934.<sup>25</sup>

#### FRED S. CLINTON

Fred S. Clinton was born in the Creek Nation, April 15, 1874,<sup>6</sup> and graduated from Kansas City University Medical College in 1897. He entered practice in Red Fork, Tulsa County, and immediately became active in the Indian Territory Medical Association (secretary 1900-1902, president 1902-

1903).<sup>11, 13</sup> (pp. 91, 106, 118) He was a Fellow of the American College of Surgeons<sup>19</sup> and practiced surgery for over 30 years. Clinton is best remembered, however, as the organizer of early hospitals in Tulsa, as Hospital Chairman of the Oklahoma State Medical Association and as an activator of the Oklahoma State Hospital Association.<sup>26</sup> Before his death April 25, 1955,<sup>27</sup> he wrote several articles on medical history, including "First Hospitals in Tulsa"<sup>28</sup> and "The Indian Territory Medical Association."<sup>3</sup>

#### FRED H. CLARK

Fred H. Clark was born in Michigan, May 15, 1864, and graduated from the Kansas City University Medical College in 1900.<sup>9</sup> He was appointed assistant in gynecology and anatomy at the medical college and practiced as surgical assistant to Doctor H. C. Crowell. In 1903 he came to El Reno, Oklahoma Territory, to be the surgical associate of Doctor J. A. Hatchett. In addition to being an accomplished general surgeon in early Oklahoma, Clark's major contributions were as editor and manager of the Southwest Journal of Medicine and Surgery and as secretary of the Medical Association of the Southwest<sup>29</sup> from 1906 until 1922, when he was elected president of the association.<sup>30</sup> He was a Fellow of the American College of Surgeons.<sup>19</sup> His practice in El Reno was interrupted by World War I service. For a few years thereafter he was roentgenologist at the Baptist Hospital in Oklahoma City,<sup>31</sup> until he left the state in 1922 for duty with the United States Veterans Medical Service.<sup>30</sup> Clark retired in 1934 and died September 1, 1942, in El Reno.<sup>32</sup>

#### LEROY LONG

LeRoy Long (figure 2) was born January 1, 1869, in Lincoln County, North Carolina,<sup>5</sup> the son of a Confederate Army veteran and farmer. Although not formally schooled, Long was studious. At the age of 20 he spent a year reading anatomy with a local physician, Robert A. McLean, who remained his advisor and friend throughout his life. Long attended a two-year course at Louisville Medical College and graduated with first place honors in 1893. Subsequently he



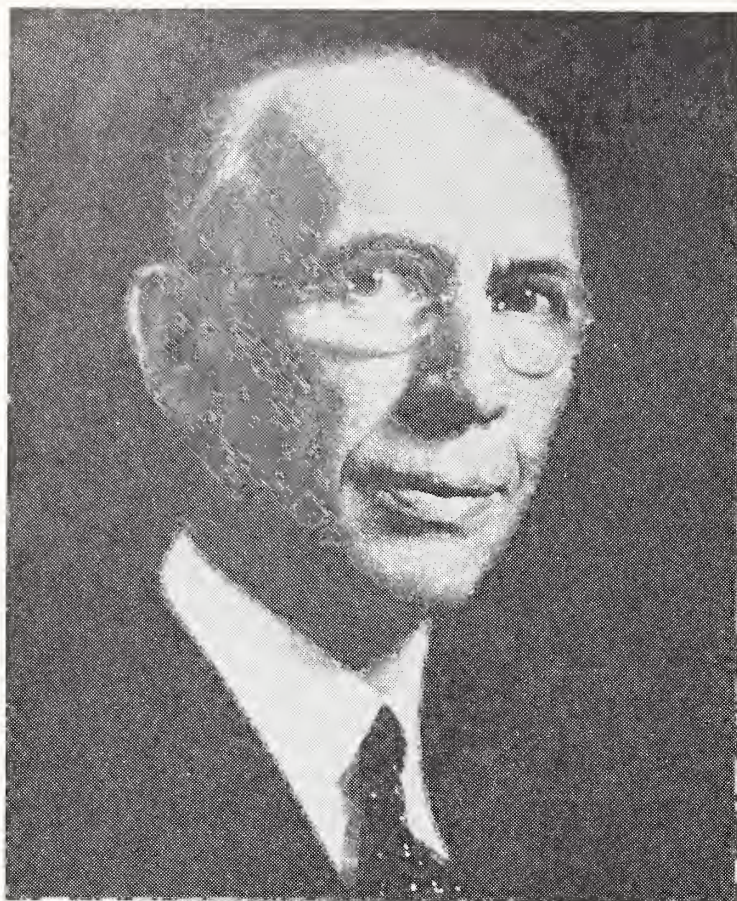


Figure 2. Dean LeRoy Long. (Courtesy of his son, Doctor LeRoy D. Long.)

became junior lecturer and clinical assistant to Dean Kelly at the Louisville Medical College and worked in the bacteriological laboratory in his spare time. After a prolonged illness with pneumonia, he accepted an opportunity in 1895 to serve three months as *locum tenens* to an alumnus, J. S. Fulton, in Atoka, Indian Territory. His ability and industry were soon recognized but he had to move after Fulton returned. Since Long had lost his heart to a young teacher, Martha Downing, a Choctaw citizen, he went a few miles south down the Missouri, Kansas and Texas Railroad to Caddo, where his growing practice soon allowed him to marry. Their sons, LeRoy Downing and Wendell McLean, were born during his years in a busy country practice. Despite a heavy work schedule, he continued to read studiously and to participate actively in the programs and offices of the Indian Territory Medical Association (Credentials Committee, Judicial Council, Committee on Constitution,<sup>13</sup> Secretary (1897-1900) and President (1900-1901).<sup>11</sup> His Presidential Addresses in December 1900 and June 1901<sup>13</sup> (pp. 95-102) urged high standards of professional ethics, better

and more uniform laws to regulate practice, the establishment of district sub-societies, the implementation of methods to care for the insane and feeble-minded, and the introduction of modern methods of dealing with tuberculosis. Long also recommended reorganizing of the Indian Territory Medical Association in conformity with the suggestions of President C. A. L. Reed, of the American Medical Association. Long was frequently appointed an official delegate to the American Medical Association. He also served in 1905 as a representative of the Indian Territory Medical Association to discuss union with the Oklahoma Territory Medical Association.<sup>12</sup> Long was elected Councilor Delegate-at-Large for the year 1906-07 at the first meeting of the united Oklahoma State Medical Association<sup>8, 12</sup> and was re-elected Councilor several times thereafter. He served as president of the Choctaw Medical Board from 1899 to 1904,<sup>5</sup> (p. 41) and chairman of the newly created Medical Board of the Indian Territory until 1906.<sup>5</sup> (p. 44) These positions brought close contacts with prominent laymen and doctors.

In 1904 he moved to South McAlester, where the facilities of All Saints Hospital prompted him soon to devote himself to surgery. That he was developing a special interest in surgery is illustrated by the succession of his contributions to the Indian Territory<sup>13</sup> (pp. 23-110) and Oklahoma State Medical Associations and various national groups.<sup>33-56</sup> Among the subjects were cystitis (1895), summer complaint (1897), emergency surgery (1901), gall bladder disease (1906), malignant disease of the large intestine (1919), harmful use of cathartics after abdominal operations (1922) and hyperthyroidism (1930).

Basil Hayes has pointed out that Long was an influential leader in surgical practice.<sup>5</sup> (pp. 50-52) Hayes credits Long especially for his appreciation of the danger and ultimate abandonment of the use of cathartics after abdominal operations.<sup>40, 43</sup> In this practice he defied the counsel of his friend, Jabez N. Jackson of Kansas City, Missouri. Long became a Fellow of the American College of Surgeons in its first year,<sup>24</sup> 1913, and was later a governor. He was an active contributor of clinical reports and of precise expō-



sitions of ethical responsibilities in surgical practice.<sup>57</sup> He was also a Fellow of the International College of Surgeons, a member of the Western Surgical Association, the American Association for the Study of Goiter, the American Association for the Surgery of Trauma and the American Board of Surgery; he was president of the Oklahoma State Medical Association and the Oklahoma County Medical Society.<sup>58, 59</sup> He participated in international meetings in Switzerland and France, where a visit to the tomb of Pasteur was a long-cherished inspiration.<sup>5 (pp. 76-80)</sup>

Long's reputation as a surgeon was an important factor in his nomination to be Dean of the Medical School in 1915. In Oklahoma City he maintained a private surgical practice, at one time with B. A. Hayes, and later with his sons, LeRoy D. and Wendell. After terminating his duties at the University Hospital in 1931, he continued to operate at St. Anthony's Hospital.

His selection as Dean was proposed in 1913 by his friend and fellow surgeon, F. B. Fite, who was a member of the State Board of Education.<sup>5 (p. 60)</sup> This nomination was supported by the former Professor of Surgery and Acting Dean, W. J. Jolly, but to no avail. However, the appointment of a new dean, C. R. Day, did not solve the medical school problems. In 1915, J. W. Duke, Guthrie; J. A. Hatchett, El Reno; and F. B. Fite jointly urged Long's selection as dean to Governor R. L. Williams. Since the days that the Governor had been a young attorney in the Choctaw Nation he had known Long well. Eventually Long agreed to accept the deanship together with the professorship of surgery. On May 28, 1915, Governor Williams wrote Long a congratulatory letter, which concluded as follows:<sup>5 (p. 64)</sup> "This is an honor that you merit and the public service that you render will be of great distinction to yourself and usefulness to the State."

At this point it would be useful to describe the dual origins of the Oklahoma University Medical School. First, premedical courses began at the Territorial University at Norman in 1900, and this activity grew into a two-year medical school. In 1909 the school was classified "A" by Doctor Abraham Flexner for the Council on Medical Education of the American Medical Association. Sec-

ond, in 1904, Dean A. K. West and other doctors initiated the Epworth College of Medicine under the auspices of Epworth University (later named Oklahoma City University). By 1910 this medical college had become an independent private corporation with a four-year program, which included 20 teachers and 47 students.<sup>60</sup> It was at this time that A. K. West, L. H. Buxton and H. C. Todd, representing the Epworth Medical group made an agreement with the Board of Regents of the University of Oklahoma for amalgamation into the University School of Medicine. The institutional merger did not include the properties of the Epworth Medical College which reverted to its stockholders. In order to conduct inpatient teaching, the University Medical School leased forty clinical beds in a hospital at Fourth and Stiles Streets from its owner, Doctor J. B. Rolater. Since these facilities were inadequate, the Council of the American Medical Association classified this four-year school as "B."<sup>61</sup>

This situation confronted Dean Long in 1915. However, President S. D. Brooks and the medical school professors soon became aware of Long's ideals and administrative energy. Some x-ray and laboratory equipment, additional teaching beds, and outpatient facilities were soon obtained. World War I, however, had really broken out and the Service soon drew many doctors, including established surgeons and professors. Dean Long's plans for the future were predicated upon legislative action. The state legislators, like the doctors, were overworked and distracted by the war effort. There was opposition from the leasor, Rolater, and many politicians. However, in 1917 the influence of Fite and other friendly physicians, and especially of Governor Williams (who threatened to veto the college appropriation), finally resulted in passage of a bill to construct the University Hospital.<sup>5 (p. 70), 62</sup> In August 1919 the new University Hospital was opened on Northeast Thirteenth Street and Wann Langston was appointed Medical Superintendent. In a short time the school of medicine was rated Class "A."

The devoted, time-consuming efforts of Long, his medical associates on the faculty and the business manager, Paul Fesler, resulted in improvements in patient care,



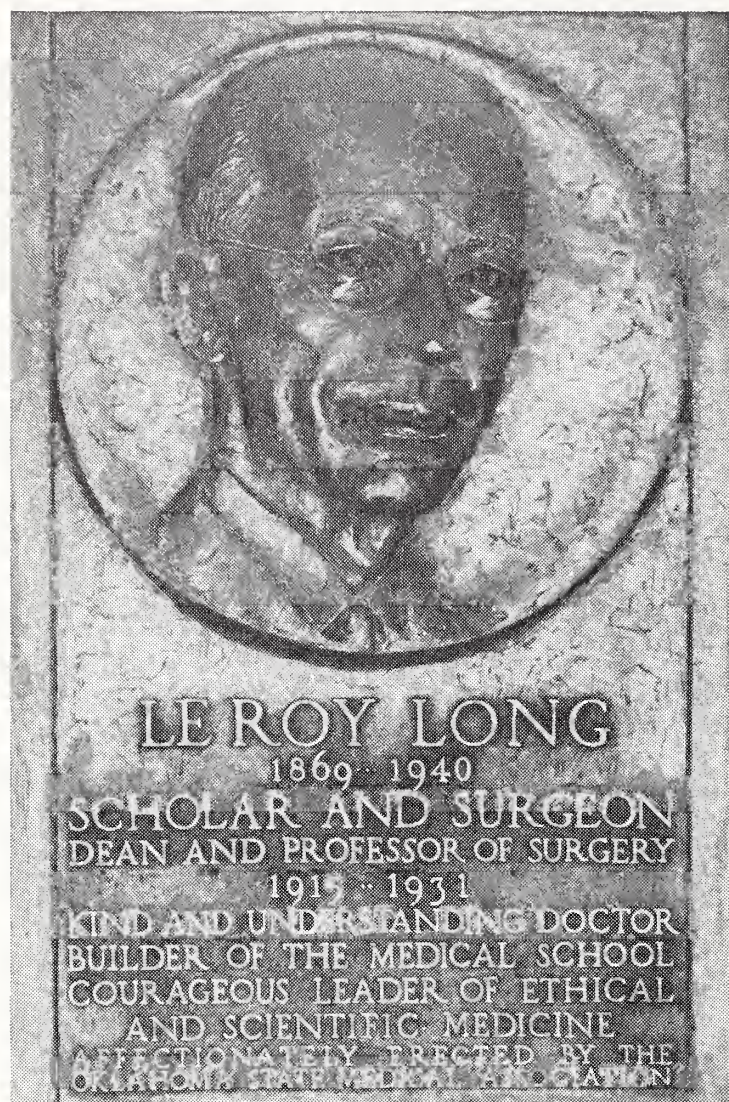


Figure 3. Plaque in entrance hall of the auditorium, University of Oklahoma School of Medicine. (Photographed by Ronald Gordon and lettering strengthened by Ernest F. Hiser, Department of Medical Illustration.)

teaching and administration. The facilities of the medical center were greatly strengthened by the addition of the Crippled Children's Hospital, which was provided through the generosity and promotion of Lew Wentz of Ponca City.<sup>5</sup> (p. 73) Later the legislature appropriated funds to erect the medical school building. This structure was dedicated November 2, 1928, in ceremonies featuring an address by Jabez N. Jackson, President of the American Medical Association.<sup>5</sup> (p. 74) The new building permitted the consolidation of the four years of medical teaching in Oklahoma City.

On October 27, 1940, at the age of 71 years, LeRoy Long succumbed to complications from coronary artery disease. Among the many tributes were those from Doctor L. S. Willour of McAlester and former Governor Williams,<sup>5</sup> (pp. 89-91) but most lasting

and significant is the bronze plaque (figure 3) at the entrance to the medical school building. The plaque includes his likeness and these words:

#### LEROY LONG

1869-1940

Scholar and Surgeon

Dean and Professor of Surgery

1915-1931

Kind and understanding Doctor

Builder of the Medical School

Courageous Leader of Ethical

and Scientific Medicine

Affectionately erected by the

Oklahoma State Medical Association

Long was the builder of the University of Oklahoma Medical School, for which many have given so much in the past, and for which we of today are planning so much for the future. □

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# Review: Metabolic Disorders Associated With Urolithiasis in Children

JAMES E. WENZL, M.D.

*One out of four children with urolithiasis will have an underlying metabolic disorder. Control of the metabolic defect may obviate the need for further surgery and preserve remaining renal function.*

**C**ALCULOUS DISEASE of the urinary tract is one of the most common urologic problems encountered by clinicians dealing with adult patients. The condition is unusual in children, but when present, warrants extensive medical evaluation because of the high frequency of association with metabolic abnormalities. In a previous publication,<sup>1</sup> 19 of 83 children with urolithiasis or nephrocalcinosis had metabolic abnormalities which were apparently etiologically related to the condition. After publication, it was found that two additional children in the original series had hyperoxaluria, bringing the total number of children with calcifications associated with metabolic abnormalities to 21. This would indicate that about one out of four children with renal calculi will have an underlying metabolic disorder. The purpose

of this review is to delineate the various metabolic disorders associated with urolithiasis in children.

## HYPERCALCIURIA

Hypercalciuria is defined as the excretion of greater than 200 mg. of calcium in the urine per 24 hours while on an unrestricted diet.<sup>2</sup> The finding of hypercalciuria does not in itself define a metabolic entity, but forces the clinician to pursue further studies to elucidate its origin. The various causes of hypercalciuria will be examined in more detail.

### *Renal Tubular Acidosis*

Renal tubular acidosis is frequently associated with calcium phosphate stones and/or nephrocalcinosis. The disease itself is a tubular disorder characterized by renal bicarbonate loss and inability to excrete adequate amounts of hydrogen ion in response to an acid load. Increased urinary calcium excretion is present, which, in conjunction with the neutral or alkaline urine, tends to precipitate out as calcium phosphate salts. Most of these patients also have increased potassium losses in the urine. Alkali in adequate dosage controls the systemic acidosis, reduces urinary calcium excretion, and decreases the frequency of new stone formation. Therefore, a good therapeutic alkalinizing solution is potassium citrate or polycitrate solutions which control the systemic

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acidosis as well as provide additional potassium. Sodium bicarbonate is also effective in controlling the acidosis, but supplementation with potassium salts or dietary potassium may be necessary.

#### *Hyperparathyroidism*

This is a difficult disease to diagnose in children, but the classical findings are an elevated serum calcium, decreased serum phosphorus and increased urinary calcium. Assays of parathyroid hormone, where available, are perhaps the most specific diagnostic methods available. Successful surgical therapy of hyperparathyroidism results in cessation of hypercalciuria and of stone formation. Preformed small stones may be passed spontaneously, so that direct surgical attack on the kidney should be postponed unless obstructive uropathy develops.

#### *Immobilization*

Osteoporosis with hypercalciuria and renal calculus formation is a well known complication of immobilization in body casts, and is occasionally seen following paraplegia or paralytic polio. Prophylactic measures include a low calcium diet, maintenance of a dilute urine, avoidance of urinary catheters and prompt diagnosis and treatment of urinary infections. Early mobilization and avoidance of exogenous Vitamin D may also be useful.

#### *Hyperadrenocorticism*

Increased recognition of renal calculi in children receiving corticosteroid therapy may result from cognizance that renal calculi or calcinosis may be associated with endogenous or exogenous hyperadrenocorticism.<sup>1</sup> Renal calculi have been reported in children receiving corticosteroid treatment of aplastic anemia,<sup>1</sup> the nephrotic syndrome,<sup>2</sup> the adrenogenital syndrome<sup>3</sup> and thrombocytopenia.<sup>4</sup> Renal calculi have been seen in a boy with Cushing's syndrome,<sup>1</sup> and an incidence of renal calculi as high as 30 per cent has been reported for adults with Cushing's syndrome.<sup>5</sup> The etiology of the stone formation is presumably related to hypercalciuria and the passage of alkaline urine.

#### *Idiopathic Hypercalciuria*

This is a syndrome characterized by hypercalciuria, a persistently normal serum calcium, and a low or low normal serum phosphorus.<sup>6</sup> This syndrome is difficult to differentiate from hyperparathyroidism, but

the presence of a persistently normal serum calcium is the most important feature. In patients who have had parathyroid explorations, the parathyroid glands are normal on gross and histologic examination. These patients tend to form recurrent calcium phosphate or oxalate stones, and are difficult to manage by use of low calcium diets or maintenance of a dilute urine. Recently, oral therapy with buffered sodium phosphate has been found to be beneficial in reducing urinary calcium excretion and in preventing formation of new stones.<sup>7</sup>

#### *Hypervitaminosis D*

Vitamin D intoxication is associated with generalized tissue deposition of calcium, including nephrocalcinosis. The evidence that it causes renal calculi is less convincing, however, although it is frequently listed as such a cause. Treatment consists of withdrawal of Vitamin D from the diet and possibly the use of adrenocorticosteroids in severe cases.

### CYSTINURIA

Cystinuria is the name given to a genetically determined tubular defect characterized by increased renal excretion of the four dibasic amino acids; cystine, ornithine, arginine and lysine. These amino acids share a common transport system which is deficient in both kidney and intestine. Although the renal excretion of all four amino acids is greatly increased, only cystine stones are formed because of the limited solubility of cystine, especially at low urinary pH values. Cystinuria may also be associated with generalized aminoaciduria in other disorders, including Wilson's Disease, cystinosis, hepatic disease and phospho-glucosaminidosis.

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*He is a member of the Southern Society for Pediatric Research, the American Society of Nephrology and the Sigma Xi and Alpha Omega Alpha.*



duria, but these patients ordinarily do not form cystine stones.<sup>8</sup>

From a genetic standpoint, there appear to be two types of the disease; one in which inheritance is recessive, the second type being incompletely recessive.<sup>8</sup> In the first type, heterozygotes do not have increased cystine excretion, whereas in the latter heterozygotes show intermediate degrees of cystinuria and lysinuria but do not form calculi. On the basis of intestinal mucosal transport studies, Segal has reported that there may be three forms of cystinuria.<sup>9</sup>

Clinically, most homozygous cystinuric individuals form renal calculi, and more than half form calculi before 30 years of age.<sup>10</sup> The onset may be as early as the first year of life. Affected patients tend to be small in stature, presumably due to loss of the essential amino acid lysine.<sup>10</sup> Morbidity and life expectancy are influenced only by the effects and consequences of renal calculi. Pyelonephritis and episodic obstructive uropathy occur commonly and may lead to anatomic renal changes which predispose to formation of calcium phosphate stones.<sup>1</sup> Thus, chemical examination of a single renal stone passed by a cystinuric patient may be misleading, since both cystine and calcium stones may be passed.

Cystine stones are radiopaque, with a characteristic waxy appearance. Cystinuria can usually be detected by the qualitative cyanide-nitroprusside test but occasional patients may give false negative results, so that quantitative 24 hour urine amino acid chromatography is preferable.

In contrast to uric acid, the solubility of which is greatly increased by alkalinization, increasing urine pH from 5 to 7.5 increases cystine solubility only threefold to fourfold.<sup>10</sup> The most important measure in preventing recurrent stones is maintenance of a very dilute urine. Approximately three ml. of urine are necessary to keep one milligram of cystine in solution,<sup>10</sup> so that calculations based on the total amount of cystine excreted per day by a particular patient will indicate the 24 hour urine volume needed to keep this amount safely in solution. This usually means maintaining a urine output of about

three liters per day, with water intake at least one time during the sleeping hours. Alkalinization with sodium bicarbonate or polycitrate is useful, for urine pH should be kept above 7.5 for maximal benefit. In cases not controlled with alkali and diuresis, therapy with D-penicillamine may be employed.<sup>11</sup> D-penicillamine forms a mixed disulfide of cysteine and homocysteine which is much more soluble than cystine, and lowers the total amount of cystine excreted, so that less is available for crystallization.

D-penicillamine should not be given to patients with a history of penicillin allergy. The long-term effects (*i.e.*, excretion and body depletion of trace metals) of a chelating agent such as D-penicillamine on growth have not been evaluated.

#### PRIMARY HYPEROXALURIA

This is a relatively rare hereditary disorder characterized by calcium oxalate nephrolithiasis and nephrocalcinosis. The finding of calcium oxalate deposits in extrarenal tissues during life or at post mortem examination is known as oxalosis. At the present time, the evidence is unclear as to whether these two disorders are identical.

Biochemically, primary hyperoxaluria is characterized by increased excretion of oxalic and glyoxalic acids. The basic defect appears to be a defect in glyoxalate metabolism, with secondary accumulation of oxalic acid.<sup>12</sup> The overproduction of oxalic acid and consequent precipitation of the insoluble calcium oxalate salt is responsible for the clinical symptoms.

The sex ratio of affected patients is approximately equal, and the disease is thought to be inherited as an autosomal recessive trait. Detection of carriers is uncertain at the present time. The majority of patients experience initial symptoms between two and ten years of age. Initial symptoms are usually hematuria or symptoms referable to a renal calculus. These patients form recurrent calculi, and renal colic and urinary infections are frequent. Many children succumb to renal failure within a decade or less, but life expectancy is variable.

Laboratory findings show an increased 24 hour urinary excretion of oxalate; exceed-



ing 50 mg. per 24 hours. Hyperuricemia is occasionally seen, and although the mechanism is not completely understood, may be related to decreased tubular secretion of uric acid in the presence of increased oxalic and glyoxalic acid within the renal tubular cells. Roentgenograms disclose the radiopaque calcium oxalate stones, and nephrocalcinosis, often of an unusual degree, may also be present.

From a metabolic standpoint, the increase in urinary oxalic acid is derived about equally from glycine and from other precursors of glyoxalic acid.<sup>13</sup> Ascorbic acid (a normal precursor of urinary oxalate) and dietary oxalate do not participate in the increased production of oxalate in this disease. Infusions of labeled glyoxalate and glycolate give rise to greater recovery of C<sup>14</sup> in urinary oxalate, and less in urinary glycine in hyperoxaluric patients than in normal patients.<sup>13</sup> These studies implicate a defect in the conversion of glyoxalic acid to glycine as being at least partially responsible for the metabolic abnormalities.

Therapy has been generally unsuccessful in the past, but two recent innovations warrant further evaluation. Frederick and associates<sup>12</sup> have reported the disappearance of preformed stones as well as decreased frequency and severity of renal colic in two patients who were placed on a high phosphate dietary program. The urinary oxalate excretion was undiminished, however.

A second approach is the use of calcium carbimide to reduce oxalate excretion. This agent may interfere with the conversion of glycoaldehyde to glycolic acid through inhibition of aldehyde dehydrogenase systems. The use of this drug in two patients reportedly reduced the oxalate excretion by 30 to 50 per cent,<sup>14</sup> but this finding has recently been challenged.<sup>15</sup> The drug itself is relatively non-toxic, but the patient must be cautioned to avoid alcohol while taking the drug. Further evaluation is necessary to define the usefulness of either of these therapeutic approaches. It must be remembered that the majority of children or adults with calcium oxalate stones do not have increased calcium oxalate excretion, and the pathogenesis of those calcium oxalate calculi remains undefined.

## HYPERURICACIDURIC STATES

Uric acid stones were once felt to be among the commonest types found in children. Two recent studies have failed to find any uric acid stones occurring among over 100 cases of urolithiasis in children.<sup>1, 16</sup> Uric acid stones do occasionally occur in children, however, and may herald juvenile gout.<sup>17</sup> They may also be seen in children with elevated urinary uric acid excretion who do not have gout.<sup>18</sup> Uric acid calculi or uric acid nephropathy may complicate hyperuricaciduria following the use of cytotoxic drugs for the treatment of lymphoproliferative disorders.<sup>19</sup> Finally, uric acid stones may form in children with the Lesch-Nyhan Syndrome.<sup>20</sup>

The presence of a low urinary pH is the most important factor in the genesis of uric acid stones since the solubility of uric acid increases markedly with increasing the pH above 6.5. Treatment and prophylaxis are directed toward keeping the urine dilute and alkaline. Urine volumes of two to three liters per day are desirable, which may require awaking at night to drink additional water. Alkalinization of the urine can be accomplished with oral sodium bicarbonate or polycitrate solutions. The patient or his mother must be instructed to test his urine with pH paper to determine the dose necessary to keep the urinary pH above 7.0 around the clock.

## XANTHINURIA

Xanthinuria is a rare metabolic disease characterized by the excretion of xanthine rather than uric acid as the major urinary end product of purine metabolism. The metabolic defect responsible is a profound deficiency of xanthine oxidase, necessary for conversion of xanthine to uric acid.<sup>21</sup> Because of this deficiency, plasma and urinary values for uric acid are extremely low, and the disorder may be predicted from determinations of uric acid. Symptoms are referable to renal calculi and may have their onset in early childhood.<sup>22</sup> The calculi are non-opaque radiographically. Treatment is necessary if the patient tends to form stones, but not all patients with xanthinuria form renal calculi. Therapy consists of mainte-



nance of a large urinary volume, alkalinization of the urine to increase solubility of xanthine, and possibly a low purine diet. Xanthine stones have also been reported in patients who apparently did not have xanthinuria.<sup>23</sup>

#### ALCAPTONURIA

Alcaptonuria is a rare, hereditary, metabolic disorder in which homogentisic acid, an intermediary product in the metabolism of phenylalanine and tyrosine, cannot be metabolized. This metabolic defect is responsible for the characteristic triad of homogentisic aciduria, ochronosis and arthritis in the adult. This disease may also be associated with formation of radiopaque renal calculi in children.<sup>24</sup> These calculi consist of oxidized derivatives of homogentisic acid. The disease is caused by a lack of homogentisic acid oxidase, and is inherited as an autosomal recessive trait. The disease may be suspected in infancy due to the dark discoloration of diapers which occurs from the passage of urine containing excessive quantities of homogentisic acid. The urine staining increases on standing or when the diapers are washed with soap since alkali speeds the polymerization of homogentisic acid to a melanin-like product. At present, no specific therapy is available.

#### MISCELLANEOUS CONDITIONS

One family manifesting hereditary glycinuria has been described in which three of four affected members passed calcium oxalate stones.<sup>25</sup> However, studies of oxalate and glyoxalate excretion were normal, so that the relationship of the glycinuria to stone formation is undefined.

Drummond and co-workers have recently reported two siblings with a new disorder which they named "the blue diaper syndrome." The disease was characterized by intermittent hypercalcemia, microscopic nephrocalcinosis, and indicanuria.<sup>26</sup> These patients had an inability to absorb tryptophan, which apparently underwent bacterial degradation in the gut to indole derivatives including indican, which is then absorbed

and excreted in the urine. Oxidation of urinary indican to indigo blue produced a bluish discoloration of the diaper. Tryptophan loading increased serum calcium markedly, apparently through enhancing calcium absorption from the gut. A low calcium diet was effective in controlling the serum calcium in one sibling. Neither of these children passed renal calculi, but this possibility certainly exists in view of the disturbance of calcium metabolism.

#### DISCUSSION

In reviewing the management of stone disease in children, it is apparent that once a stone is discovered, emphasis is often placed on its removal and efforts to elicit contributing factors leading to formation are often ignored. Proper metabolic investigation for all children with renal calculi is imperative, if we are to diagnose and treat those with underlying metabolic disorders. It is most important that we know if a child has a disease such as cystinuria or hyperoxaluria, so that every effort may be made to avoid nephron-sacrificing surgical procedures as long as possible. I believe that adequate evaluation of all children with renal calculi should include determinations of serum calcium, phosphorus, alkaline phosphatase, proteins and of blood pH. Urine examinations should include urinalysis, urine cultures, 24 hour urine determinations of calcium, phosphate, oxalate and uric acid excretion, as well as a quantitative evaluation of urinary amino acids. The necessity of obtaining adequate x-ray examinations of the abdomen, intravenous pyelograms and, if indicated, retrograde pyelograms is obvious. The chemical analysis of any stones recovered is mandatory. Even after completion of such an evaluation, there will still be a group of patients in whom the cause of stone formation may be related to as yet undefined metabolic disturbances.

#### SUMMARY

Calculous disease of the urinary tract is uncommon in children but when it occurs, it is frequently associated with an underlying metabolic disorder. The metabolic disorders most frequently encountered are the various



hypercalciuric states, cystinuria, and primary hyperoxaluria. Less common disorders include the hyperuricaciduric states, xanthinuria and alcaptonuria. Proper metabolic investigation is mandatory for all children with renal calculi, in order to define and properly treat those with an underlying metabolic disturbance. □

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# Books As Clinical Tools

## CLINICAL REFERENCES ON PEDIATRIC HEMATOLOGY

DANIEL M. LANE, M.D.

Since it is a relatively young subspecialty, the number of texts dealing specifically with pediatric hematology is limited. The major text *Blood Disease of Infancy and Childhood*<sup>1</sup> by C. H. Smith is an excellent, comprehensive one. The second edition, published in 1966, represents a significant modification of the original edition. It is an excellent source of reference material and covers quite effectively the specific problems related to blood disorders in children. Its greatest weakness is that the most recent information on some subjects is not presented in as well organized a fashion as it might be. However, basic information can readily be obtained on any specific problem in pediatric hematology.

Oski and Naiman have written recently a very interesting and excellent monograph entitled *Hematologic Problems in the Newborn Infant*.<sup>2</sup> The hematologic problems of this period of life are beautifully covered and this book represents an excellent source of information.

As material on this subject progressively accumulates, adequate coverage of pediatric oncology will eventually be produced in book form.

For information about specific areas on problems in pediatric hematology, selected works which cover such subjects in depth can be consulted. Examples include Biggs

and Macfarlane's *Human Blood Coagulation and Its Disorders*,<sup>3</sup> Weatherall's *The Thalassemia Syndromes*,<sup>4</sup> Dameshek and Gunz's *Leukemia*,<sup>5</sup> Lehmann and Huntsman's *Man's Hemoglobins*,<sup>6</sup> and Mollison's *Blood Transfusion in Clinical Medicine*.<sup>7</sup> Many other special interest books are available and represent good sources of material on blood disorders in children. Unfortunately there is no good book currently available which covers specifically or is limited to malignancies in childhood.

Information is available, of course, in the general hematology text books, such as those by Wintrobe.<sup>8</sup> In general, the approach to pediatric hematologic problems is frequently not acceptable or is out-of-date. Areas covered are frequently not compatible with current thinking among pediatricians and offer therapeutic solutions which fail to take into consideration the influence of developmental factors. This is particularly true in relation to the fact that many hematologic problems with which pediatricians deal represent the earliest manifestations of a lifetime disease. The necessity to approach these problems so as to produce a useful and effective citizen is crucial and frequently not well covered in general texts on hematology. □

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From the Department of Pediatrics and the Children's Memorial Hospital, University of Oklahoma Medical Center.

One of a series sponsored by the Department of Continuing Education, University of Oklahoma Medical Center.



## \$68 Million in Medical Facilities

Oklahoma's medical profession has a \$68 million interest in approval of the \$99,808,000 state capital improvements bond issue at the December 10th special election.

Construction of more than \$45 million worth of health manpower education and health care facilities is provided in the omnibus bond proposal adopted by the 1968 Oklahoma legislature.

Federal matching fund grants will augment the bond issue total for medical and health facility construction by more than \$23 million.

Triggered by voter adoption of the bond issue will be a building program designed to up-grade many state programs in the fields of mental and public health as well as provide the quarters for a vastly expanded training system for medical and health care personnel.

Second largest of bond items earmarked by the legislature is \$26,870,000 for the Oklahoma State Regents for Higher Education for expenditure at the University of Oklahoma Medical Center in developing the heart area of the Oklahoma Health Center.

The legislature also allocated \$4,516,000 to the State Department of Health to provide new facilities, also in the Oklahoma Health Center, as well as a total of \$1,000,000 to modernize existing state hospitals and sanatoria at Clinton and Talihina.

Another major expenditure for health-care facilities will be \$8,000,000 provided for the State Department of Mental Health.

A far-reaching new program of health manpower education and training will be vitalized for the University Medical Center. Bond funds will provide buildings to house:

—A new School of Dentistry, with appropriate clinics, to offer dental education for which Oklahoma students must now go out of state, to cost \$8,500,000.

—A new School of Public Health, to offer education in that specific field, at a cost of \$6,500,000.

—A new School of Health Related Professions, for the education of

technicians and other para-medical personnel essential to the health care family, to cost \$1,500,000.

### TAKE TEN

The multimillion dollar December 10th bond issue is of extreme importance to Oklahoma physicians and other health personnel. If each member of the Oklahoma health team will contact ten of their friends and urge them to vote—and to vote yes—on December 10th the passage of the bond issue will be assured.

Physicians should challenge their wives, nurses, medical assistants and hospital and staff personnel to **take ten** for the bond issue.

Yours truly,  
SCOTT HENDREN, M.D.,  
OSMA President

### BOND ISSUE IN BRIEF

\$26,870,000 for Oklahoma University Medical Center.

\$4,516,000 for State Department of Health.

\$8,000,000 for mental health institutions.

\$500,000 for Oklahoma General Hospital, Clinton.

\$7,250,000 for State Department of Vocational Education.

\$1,000,000 for tuberculosis sanatorium and Community Social Service centers.

\$100,000 for Cerebral Palsy Institute, Norman.

\$4,375,000 for state schools for the retarded, deaf and blind, and orphanages and correctional institutions.

\$1,000,000 for juvenile diagnostic evaluation center.

\$34,250,000 for institutions of higher learning.

\$4,000,000 for Tulsa Junior College.

\$2,000,000 for other new or existing community junior colleges.

\$5,947,000 for other state agencies.

—The University School of Nursing, which has suffered from ancient and inadequate quarters for many years and recently lost a portion of its building to make room for the Medical School's Basic Science Building, to cost \$2,000,000.

—A Graduate Education Center, planned to provide graduate study and research facilities in the field of health and medicine, to cost \$500,000.

—The second 200-bed wing of University Hospital which will include outpatient and other clinical facilities, to cost \$3,700,000.

In addition, the bond allocation for the Medical Center includes \$4,000,000 for acquisition of land to provide sites for the proposed new educational facilities and other Oklahoma Health Center developments.

It is anticipated that federal matching funds will virtually double the amount of bond money available for Medical Center construction.

Also scheduled to be re-located in the Oklahoma Health Center is the State Department of Health which now occupies the former Oklahoma Veterans Home on North Eastern Avenue in Oklahoma City, as well as quarters in three other buildings.

The legislature earmarked \$4,516,000 for a new central administration building and other facilities for the health department. Supplemented by some \$2,250,000 available to the department from a previous bond issue, the total will provide for a ten-story administration building with a three-story laboratory wing. The health department will then have 168,000 square feet of space, about double that in its present overcrowded quarters.

Bond funds for the health department will be augmented by \$800,000 of federal matching funds.

Construction of the new facility will logically establish the health department on the Oklahoma Health Center campus where it can func-



tion as a training school in a sympathetic environment and involvement with the School of Medicine, Public Health and Health Related Professions.

Another item in the bond proposal allocates \$500,000 to the health department for substantial remodeling and modernizing at Oklahoma General Hospital at Clinton, a 100-bed institution. Similar undertakings will be made possible at the Eastern Oklahoma Tuberculosis Sanatorium at Talihina and the Western Oklahoma Tuberculosis Sanatorium at Clinton, each allotted \$250,000 for extensive modernizing.

The \$8,000,000 earmarked for the State Department of Mental Health will be spent in general remodeling and modernizing work at the four mental institutions—Central State Griffin Memorial Hospital at Norman, Eastern State Hospital at Vinita, Western State Hospital at Fort Supply, and Taft State Hospital at Taft. A portion of the bond item also was set out by the legislature for equipping community mental health centers, the sites to be determined by the department of mental health.

Despite the size of the bond issue, no new taxes or tax increases will be required to fund it.

The building bonds, like their predecessors of recent years, can easily be retired by allocations from the existing 13-cents-a-package state cigarette tax.

Seven cents of the present tax already are allocated for building bond requirements, and that allocation will be sufficient to meet requirements of the \$99,808,000 bond issue if it is approved. While the seven-cent allocation accounts for some \$19 million a year in revenue that can be used for bond funding, the maximum present bond requirement in any year is some \$10 million in 1986. Thus a "cushion" of at least \$9 million is available during any given year to absorb the requirements of the proposed bond issue, without diverting any additional cigarette tax revenues from the state general fund.

It's a "no new tax" package with a much needed potential for expansion of Oklahoma's medical and health care manpower education establishment. □

## Trustees Rescind Claims Review Stand

During its October meeting the OSMA Board of Trustees issued a new policy statement allowing the OSMA Medical Insurance Review Committee to hear questions concerning over-utilization. This action rescinds a policy statement issued by the board on July 28th of this year.

The July statement said that the committee should review matters involving utilization, but added that such matters are not of OSMA concern unless fraud or deceit are involved. The overall effect of the board's statement prevented the review committee from hearing questions of over-utilization.

The chairman of the review committee, R. E. Carpenter, M.D., requested that the OSMA Governmental Relations Committee study the original policy statement for the purpose of clarifying the OSMA stand toward future review cases involving over-utilization.

The Governmental Relations Committee determined that the policy statement removed jurisdiction of such questions from the review committee. It then prepared a report requesting the Board of Trustees to rescind its July action and to restate the association's position on such questions.

The report was presented to the board by Robert Sukman, M.D., Chairman of the Governmental Relations Committee. Following his presentation, the OSMA Board passed a motion to accept the report and to rescind its original action.

Because of its importance to association members, the entire report of the Governmental Relations Committee concerning over-utilization is set out below.

### REPORT

On July 28th the Board of Trustees of the Oklahoma State Medical Asso-

ciation approved what appears to be an ambiguous policy statement regarding the function of the association's Medical Insurance Review Committee. The statement said, in effect, that the committee should review matters involving utilization, but added that such matters are not of OSMA concern unless fraud or deceit are involved.

The board's action was referred by the Chairman of the Medical Insurance Review Committee to the Governmental Relations Committee on October 13th for the purpose of clarifying the OSMA stance toward future review cases involving questions of over-utilization.

### Background

The House of Delegates approved a policy statement in May of 1966 concerning the jurisdiction and function of the OSMA medical insurance review system.

According to the statement, the purpose of review committees created by the OSMA and its component societies is to seek "the objective reconciliation of unusual medical insurance claims involving members of the OSMA and health insurance coverages which offer payment of customary and reasonable fees."

It soon became apparent that the majority of such review cases were concerned with the cost generated by the quantity of services rendered rather than by the price of an individual service, and the OSMA committee considered it proper to interpret the House of Delegates' statement to include such matters as within the jurisdiction of the review system.

This interpretation is not unique, since the American Medical Association's House of Delegates urged in 1966 that state and local medical societies inaugurate review procedures, and the AMA published guidelines which included "correction of inappropriate utilization practices."

The OSMA Governmental Relations Committee drafted the current operational rules for peer review based on the AMA guidelines and other



successful programs in force elsewhere.

It should be obvious to all physicians that the costs of medical care are currently the subject of great public and governmental concern. From the medical service standpoint, these costs may be influenced adversely by either the unit value of individual services or by the quantity of services rendered.

Carriers of public and private health care programs which pay on a "usual, customary and reasonable" fee basis cannot be expected to pay all bills without question; there must be reasonable controls to protect the programs from both excessive charges and charges for unnecessary medical care.

These controls may be applied directly by the carriers or indirectly through the delegation of authority to peer review committees established by elements of organized medicine.

Thus, by establishing a complete and effective medical insurance review system, the OSMA and its component societies have an opportunity and a challenge—an opportunity to temper the claims-paying authority of carriers through the tool of professional judgment, and the challenge to make certain that the image of the majority of physicians is protected from the damage which may be wrought by the actions of a few.

#### Operation of Committees

OSMA review committees may consider questioned claims on behalf of the carrier, the patient or the physicians, only after all other avenues of settlement have been exhausted. Every effort is made to give all concerned parties a fair hearing, and the judgment of a county review committee may be appealed to the OSMA committee.

The review committees are comprised of practitioners representing a cross section of the medical community, and in a further effort to deal with problems fairly, special medical consultants may be called in for advice on particular cases under review.

OSMA's operational rules provide that the review committees shall

limit their activity to that of making a judgment as to the economic liability of the carrier. If a case involves gross ethical implications, the review committee must transfer jurisdiction to the appropriate disciplinary body of the state or county society.

Your Governmental Relations Committee has complete confidence in the committees established at the state and local levels; it believes that the system has adequate safeguards for fair hearings on review matters involving individual fees or over-utilization; and it is impressed with the absolute necessity for organized medicine to assume a responsible position in the field of peer review.

The experience of our review committees since July 1st, 1966 reveals: that a small group of Oklahoma physicians have been rightfully admonished; other cases have been found in favor of the physician; one case has resulted in disciplinary proceedings; and a large number of reviews have simply amounted to a counselling service between the review committee and the involved physician.

#### Recommendation

The Governmental Relations Committee appreciates the intent of the Board of Trustees action taken on July 28th, *i.e.*, to protect members of the OSMA from undue interference with their practice of medicine.

However, we believe that the review mechanism already has adequate safeguards in this direction, and we fear that the restrictive language of the board action will confuse and perhaps negate the necessary mission of our review committees in effecting professional controls over the economic liability of carriers for the quantity of services rendered. Moreover, to disenfranchise the review committees from problems of utilization will not diminish carrier interest in this subject; rather, carriers will have to proceed to investigate problems of this nature without the professional guidance which we are equipped to provide.

We believe that the utilization of professional services can be controlled to a large degree by the individual physician who has intimate knowledge of his patient's true medical needs.

The Governmental Relations Committee therefore recommends that the Board of Trustees rescind its policy statement of July 28th and that it give its support and a vote of confidence to those physicians who are serving in the important arena of peer review. □

### OSMA Earns Doctors \$194,300

Most association members tend to consider their affiliation with an organized group as an intangible asset. However, the Chairman of the Oklahoma State Medical Association's Council on Insurance, C. E. Woodard, M.D., has released a bit of arithmetic to illustrate that nearly 900 OSMA members can truly measure the value of their association in "dollars and cents."

The OSMA-sponsored program of professional liability insurance, written for association members only, will save participating members about \$166,000 in insurance premiums from January 1st, 1967 to December 31st, 1969, according to Doctor Woodard.

Pacific Employers Indemnity Company, OSMA's approved malpractice carrier, has recently declined to increase the "excess limits factor" as recommended by the National Bureau of Casualty Underwriters, and participating OSMA members have thereby avoided another significant escalation of premiums.

Moreover, PEIC is expected to pay a premium dividend in January if the association's loss experience continues to be favorable. When this expected dividend of \$28,300 is added to the premium savings, total savings to OSMA members will be \$194,300. For the 900 participating members, this will be an average savings of \$215 each.

How is such a bargain possible? Doctor Woodard said the program is the result of months of negotiation



## Physicians and Clergy To Confer

between the association and PEIC's parent company, the Insurance Company of North America. Doctor Woodard said: "Our favorable position is due to a unique arrangement we have with the company which involves certain cooperative features, the heart of which is the association's efforts to keep losses to a minimum through an ongoing educational program to keep doctors abreast of their medical-legal duty."

"In addition," he continued, "the best way to avoid malpractice suits is to practice high-quality medicine, and through OSMA-sponsored seminars, the association contributes toward this basic objective of organized medicine."

The association and the insurance company have cooperated in presenting professional liability programs at state and county medical meetings, articles on the subject are frequently published in association periodicals, and a comprehensive booklet on malpractice prevention is now at the printer.

"The association's Council on Insurance works closely with the carrier in studying malpractice trends and tailoring claims prevention efforts to known problems," Woodard said.

"Our future premium rates depend on how successful we are in creating a medical and legal environment unfavorable to malpractice claims, and this will, in turn, depend on the cooperation of all OSMA members to be constantly sensitive to their medical and legal responsibilities toward the patients they serve. The new booklet, to be distributed soon to all association members, will provide physicians with basic information necessary to avert the risk of professional liability actions."

Coverage under the OSMA-PEIC program is available to association members through agents of the Insurance Company of North America. In situations where no INA agent is available in the community, the policy may be brokered through any insurance agent of the doctor's choice. □

"Marriage" will be the subject of the Second Statewide Conference on Medicine and Religion, Thursday, December 5th, in the Camelot Inn, Tulsa. The all-day meeting is being jointly sponsored by the OSMA Committee on Medicine and Religion and the Pastoral Services Commission of the Oklahoma Council of Churches.

All Oklahoma physicians, clergymen and their wives are invited to attend. Registration fee of \$5.00 per person for the conference should be mailed to the OSMA Executive Office in Oklahoma City.

The first speaker on the program will be the Reverend L. Mack Powell, speaking on the subject of "Sex and Self." The reverend is an ordained Methodist minister and for the past seven years has been special lecturer on Marriage and Family Courses in the Family Development Department of the School of Home Economics at the University of Oklahoma.

Reverend Powell's presentation will be followed by, "The Church and the Sexual Revolution—A Prudish Physician's Appraisal" by Edward K. Norfleet, M.D., Tulsa psychiatrist.

Luncheon speaker for the meeting will be James L. Dennis, M.D., Vice-President, Oklahoma University Medical Center. He will speak on the subject "Medicine, Population and Responsibility."

John L. Hoff, Th.D., Assistant Professor of Pastoral Psychology and Counseling at the Graduate Seminary, Phillips University, will present a talk in the afternoon. His presentation will be followed by a new film from the AMA's Department of Medicine and Religion.

The first Medicine and Religion Conference was held in Oklahoma City last year with nearly 200 physicians and clergymen in attendance. It is expected that the attendance at this conference will be much greater. □

## Medical Panel Amendment Passes Interim Subcommittee

A joint House-Senate subcommittee approved an amendment that establishes a medical panel to review Workmen's Compensation cases.

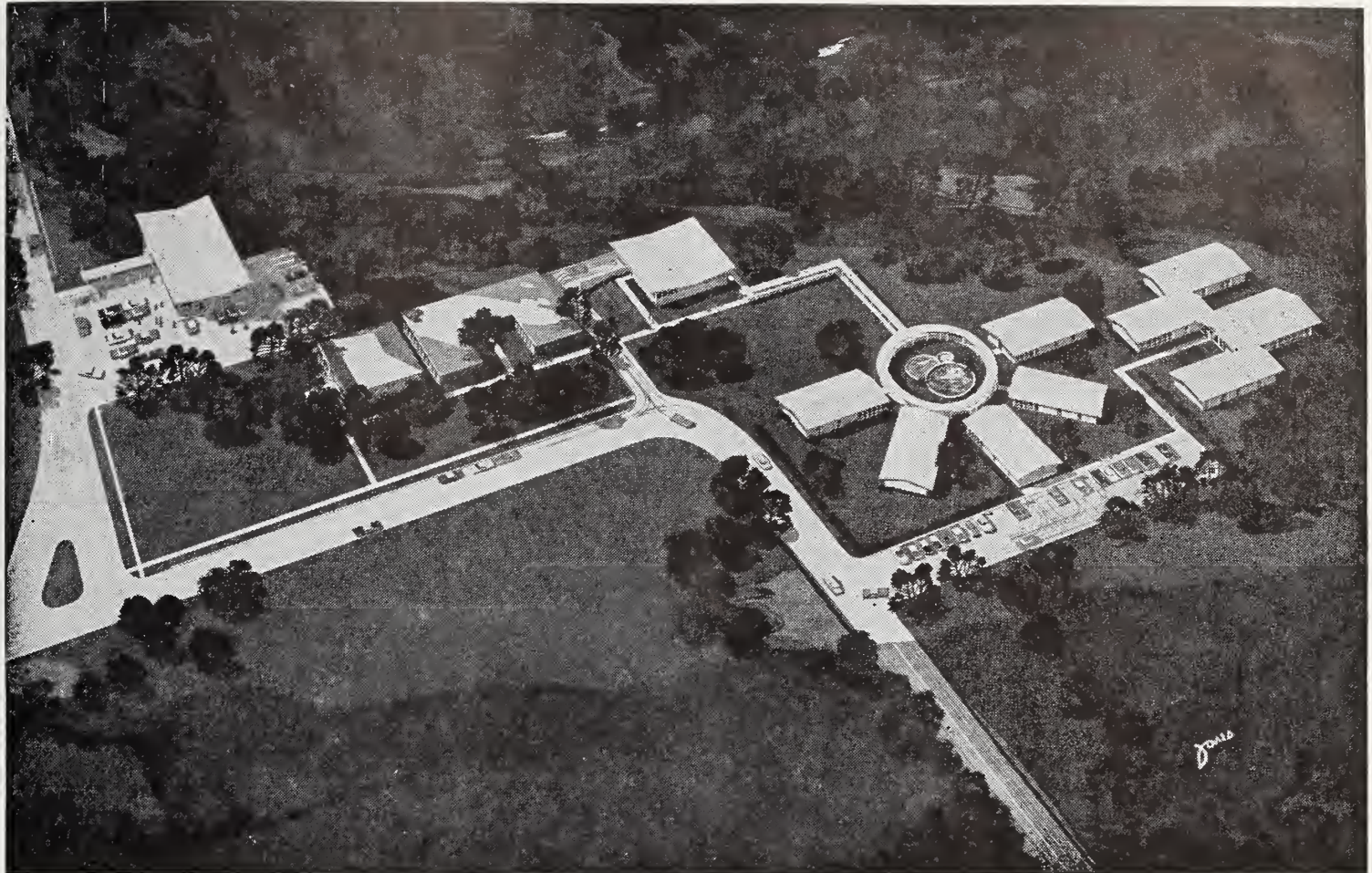
The committee, studying revision of Oklahoma's Workmen's Compensation Law, had high praise for state physicians. Representative Larry Derryberry, chairman of the committee, said: "... the medical panel amendment could well be the most significant act this committee has approved."

The eleventh and final meeting of the committee ended at 10:00 p.m. October 29th, after reviewing and approving ten special amendments to the law.

The medical panel amendment, drafted and approved by OSMA's Occupational Medicine Committee, is the product of many hours of hard work. It provides for a medical panel that "... shall be called into service by the court when med-

ical witnesses . . . have produced testimony . . . divergent to the extent of twenty per cent or more." According to the act, "... 40 or more . . ." physicians will be selected from a list provided by the Oklahoma State Medical Association to serve for staggered terms of one and two years. The panel shall have the right to select its chairman. The chairman will be responsible for selecting physicians to serve in cases of medical disputes. Doctor James Bell, chairman of the OSMA Occupational Medicine Committee, indicated that the medical panel appears to provide the best means of securing unbiased testimony. "We hope the panel will function as we have envisioned it," said Doctor Bell, "Doctor Henry F. Howe, head of the AMA Occupational Health Department, has hailed the measure as an 'excellent addition to Oklahoma's Workmen's Compensation Law.' "





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## Brogden Named Co-Director of Family Medicine Clinic

A South Dakota family doctor has given up a practice of 15 years standing in that state to help train future family physicians at the University of Oklahoma Medical Center.

He is Doctor Preston Brogdon, a past-president of the South Dakota State Medical Association and the South Dakota Academy of General Practice.

Doctor Brogdon came here to join the Medical Center's Family Medicine Division as co-director of the Family Medicine Clinic, NE 15th and Phillips, and assistant professor of preventive medicine and public health.

Doctor Brogdon quit his practice in Mitchell, South Dakota, where he also was a prominent civic and church man, because he was attracted by the concept of the new OU Medical Center program to prepare physicians to become modern day "general" or "primary" family doctors, he said.

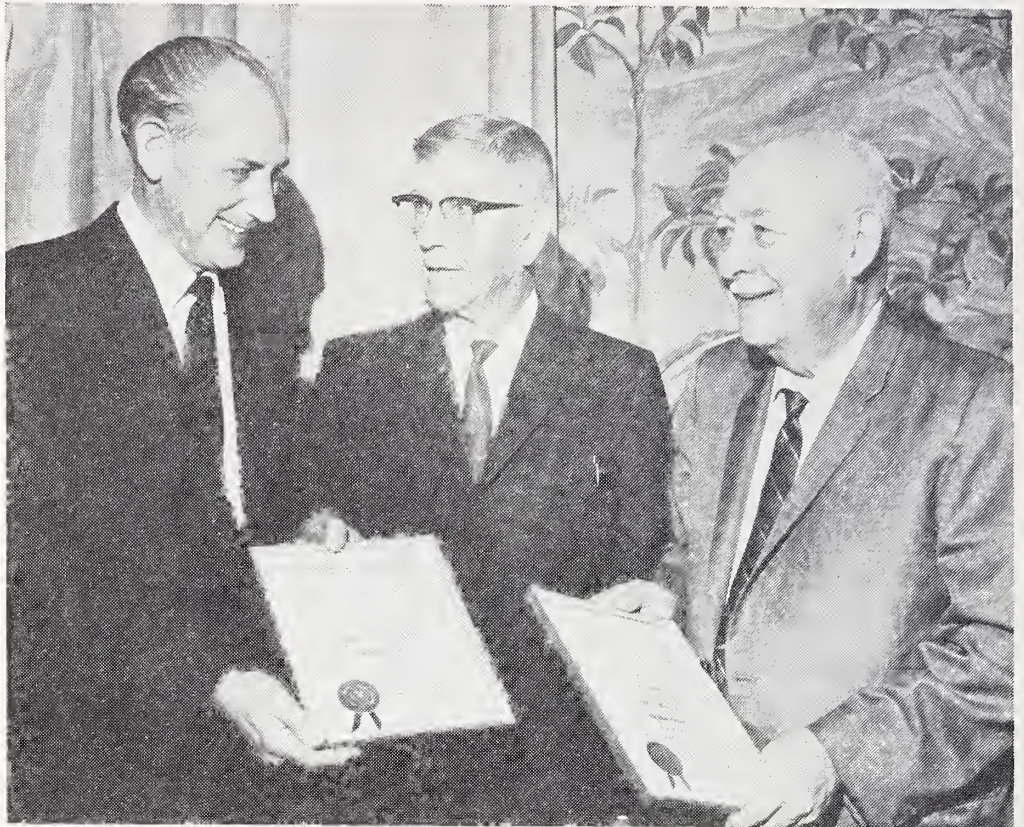
"I guess I'm sort of a missionary about general practice," he added. "I saw it fading away and I became interested in ideas for updating the preparation of physicians for general practice and producing specialists in looking after the basic medical needs of a family."

Doctor Brogdon said he is not without Oklahoma background.

He is a grandson of the late Doctor W. C. Gilliam, a "typical country doctor" who practiced in the state from 1900 to 1953 and died in Spiro just 12 days short of his 99th birthday. He practiced at Fame, which was located on the banks of what is now Lake Eufaula, and in Eufaula, Spiro and Stidham, Keota and Quinton.

Doctor Brogdon, 46, is a native of Springdale, Arkansas, and a 1945 graduate of the University of Arkansas School of Medicine.

He interned at Baptist Hospital, Little Rock; did a two-year stretch in the army, and then a general



Two veteran Tulsa physicians, Iron H. Nelson, M.D., (center), and Maurice J. Searle, M.D., (right), are shown as they receive certificates of Life Membership in the Oklahoma State Medical Association.

Making the presentation at the October 14th meeting of the Tulsa County Medical Society is Doctor Scott Hendren of Oklahoma City, OSMA President.

Doctor Nelson, a pathologist, retired last July. A graduate of the University of Oklahoma School of Medicine, Class of 1940, he was a partner in Glass-Nelson Laboratories of Tulsa.

Doctor Searle, a pediatrician, is still in active practice. He received his medical degree from Jefferson Medical College in 1921, and entered practice in Tulsa two years later. Doctor Searle is a former President of the Tulsa County Medical Society (1938), and served fifteen consecutive years as a member of the TCMS Board of Trustees. He was also a Councilor to the Oklahoma State Medical Association, and is a former Alternate AMA Delegate from Oklahoma. □

practice residency at the Springfield (Ohio) City Hospital.

One of Doctor Brogdon's major new duties is sharing with Doctor Roger I. Lienke, Family Medicine director, the responsibility for training the Medical Center's Family Medicine residents—young physicians coming here for two to three years specialization in general or family practice.

The first three residents started training during the summer. They are Doctor Norman Haug, a graduate of the University of Colorado School of Medicine, Denver; Doctor Hodges Martin, from Southwestern Medical School, Dallas; and Doctor Don McHard, an OU medical graduate. □

## Ostomy Group Holds Regular Meetings

The Ileostomy and Colostomy Association of Oklahoma City holds regular meetings on the second Monday of each month in the Presbyterian Hospital conference room at 7:30 p.m.

The association is a member of the United Ostomy Association which is affiliated with the American Cancer Society.

Meetings are open to anyone in need of appliance information and physicians are being urged to inform their patients of this service. Details concerning the group may be obtained by calling WI 2-7186 or VI 8-3443. □



# OSMA Board Attends SAMA Banquet

Following their meeting on October 19th, members of the OSMA Board of Trustees attended the annual SAMA Banquet in the Sheraton-Oklahoma Hotel. Sponsored each year by the OSMA, over 450 people attended this year's banquet.

The board meeting was purposely held on the same day as the banquet to promote closer cooperation between medical students and practicing physicians. Officers and trustees sat at different tables in order to give the association a maximum exposure to the student-body members of SAMA.

The banquet speaker was John E. Tysell, M.D., Eugene, Oregon. He is a past-trustee, past president-elect and past-president of the Oregon Medical Association. During his tenure as president of the OMA, 1966-67, his son was president of the Oregon Chapter of SAMA.

In his remarks the doctor stated, "I believe things are bad and that they are going to get better!" He went on to say that they are going to get better because the generation that is now in medical school is going to apply the "democratic process in decision-making more wisely, more vigorously, and more effectively than mine did."

Referring to Medicare he stated, "The dream of no third party intervention between doctor and patient is, for the most part, a dream and a memory. He who says, 'Let me practice my most scientific medicine and let others make the arrangements,' is abdicating a portion of his doctor-patient responsibility."

While talking about medical training, Doctor Tysell said, "After the pressures of a long, difficult, and costly period of training, the average doctor emerges into society nearly 30 years of age. He then becomes very busy establishing a practice and a home, and gaining a few of the comforts and pleasures that his nonmedical friends have had for some years."

He went on to say that if organized medicine is to be a "good corporate citizen" it must learn to deal

# Journal Gets New Editor-in-Chief

Mark R. Johnson, M.D., has been named by the OSMA Board of Trustees as Editor-in-Chief of the OSMA Journal. The action was taken at the board meeting on October 19th, in Oklahoma City.

Johnson's appointment will extend until May, 1970, in order to fill the unexpired term of the late Ben H. Nicholson, M.D.

A graduate of the OU School of Medicine, Johnson has been active in the OSMA for many years. He served two terms as Secretary-Treasurer of the association and as chairman of several major association committees.

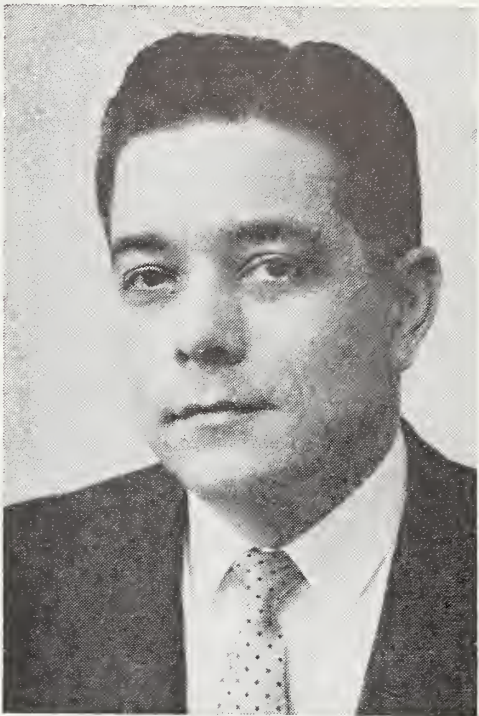
He is President of the University of Oklahoma Research Institute and a former Assistant Medical Director of the OU Hospitals. He served as a member and President of the Board of Regents for the University of Oklahoma.

A native of Salt Lake City, Utah, Doctor Johnson received his Bachelor of Science degree from the University of Oklahoma. After graduation from the OU School of Medicine he served his internship at the University of Wisconsin General Hospital and has taken resident training in internal medicine at the University

with the agencies, departments, groups, and media that are interested in health care in our democratic society. This calls for competitive bargaining and if one side or the other does a poor job, or none at all, the democratic system itself is threatened.

Using Winston Churchill's famous comment, "Everybody knows that democracy is the worst possible form of government—except for all known alternatives," the doctor went on to point out that democracy can be destroyed as surely by indifference as by demagogues and that physicians must take an active interest in organized medicine in order to furnish the best possible health care to all.

Following his formal remarks, Doctor Tysell entered into a question and answer period with the members of SAMA attending the banquet.



MARK R. JOHNSON, M.D.

of Oklahoma hospitals and was a trainee of the American Heart Association from 1953-55.

He served on active duty in both the United States Air Force and Army and has been stationed in the Azores, Korea and Hokkiado, Japan. He received a Bronze Star and the Meritorious Service Medal while in Japan and Korea with Oklahoma's 45th Division.

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## DEATHS

JAMES S. BOYLE, M.D.  
1925-1968

An Oklahoma City urologist for the past 13 years, James S. Boyle, M.D., died October 4th, 1968. He was born in St. Joseph, Missouri, and graduated from the University of Oklahoma School of Medicine in 1948. Doctor Boyle took his residency training in urology at the Veterans Administration Hospital in Wadsworth, Kansas.

W. P. LAWTON, M.D.  
1888-1968

An 80-year-old El Reno physician, W. P. Lawton, M.D., died in Oklahoma City October 7th, 1968. A native of Nashville, Tennessee, Doctor Lawton graduated from the University of Tennessee College of Medicine in 1914. He moved to El Reno from Shreveport, Louisiana in 1915.

Doctor Lawton had served as president, vice-president and secretary of the Canadian County Medical Society.

CECIL R. STANSBERRY, JR., M.D.  
1927-1968

Cecil R. Stansberry, Jr., M.D., 41-year-old Oklahoma City physician and brother of Richard D. Stansberry, M.D., also an Oklahoma City physician, died October 19th.

Born in Oklahoma City, Doctor Stansberry was graduated from the University of Oklahoma School of Medicine in 1957. Following his residency training at Mercy Hospital, he established his practice in Oklahoma City.

Doctor Stansberry was a Delegate to the Oklahoma State Medical Association, a member of the Oklahoma Chapter of the American Academy of General Practice and the Alpha Omega Alpha. □

## Scientific Sessions Planned for AMA Clinical Convention

Scientific sessions of wide medical interest are planned for morning and afternoon Monday through Wednesday, December 2nd-4th, at the American Medical Association's 22nd Clinical Convention in Miami Beach, Florida.

Morning topics December 2nd include the anemias, thrombophlebitis, and obstetrics. The afternoon program includes discussion of white cell disorders and diseases of the lymph nodes, management of claudication, cerebral ischemia due to neck vessel occlusion, and gynecology.

Tuesday, December 3rd, topics are cardiology, gastrointestinal diseases, proctology, and—in the afternoon—new approaches in cardiology, bacterial skin infections, and the skin and sunlight.

Discussions on sex will be held Wednesday morning, December 4th,

to include such topics as marital problems, changing sex values, pre-adolescent and adolescent sex education, and sex and the senior citizen. Hypertension and the kidney also will be studied at the morning session.

Wednesday afternoon's topics include pulmonary diseases, respiratory ills in children, and more on the kidney.

Scientific sessions will be held in Miami Beach Convention Hall. Total registration is expected to be about 10,000, including 4,500 physicians; 300 medical students, nurses, and members of allied medical professions; 800 industrial exhibitors; and 4,400 guests of physicians and exhibitors.

The October 21st issue of *The Journal of the American Medical Association* carried the Scientific Program for the Clinical Convention. □

## BOOK REVIEWS

### PRACTICAL AUTOMATION FOR THE CLINICAL LABORATORY.

W. L. White, B.A., M. E. Erickson, B.S., Clinical Chemistry Laboratory, Barnes Hospital and S. C. Stevens, B.A., M.A., Ph.D., Director, Division of Endocrine Chemistry, Jewish Hospital, St. Louis, Missouri. 1st Edition, Cloth, 401 pp., with 242 illustrations. St. Louis: The C. V. Mosby Company, 1968. \$14.50.

The book presents a practical approach to the utilization of some automatic equipment. The chapter on basic mechanics and electronics has been geared specifically to the Technicon AutoAnalyzer systems. The mechanics of other automated systems and a discussion on optics would not have been out of place.

The authors have described the Technicon AutoAnalyzer systems, except for the SMA-12/60, in very great detail. They offer summarized sections for preventive maintenance and trouble shooting. The operation of the Perkin Elmer 303 atomic absorption Spectrophotometer and the Bausch and Lomb spectrophor (I) have been described with maintenance hints only. Apparently they are trouble free in the authors' laboratories.

The Mecolab has received such scant attention, it need not have been discussed at all. However the Robot chemist has been very well described. It includes a section on programming the instrument for a new procedure but offers neither maintenance nor trouble shooting suggestions.

Other instruments discussed include the BSL Clindata computer system, the AutoTechnicon ultra for automatic processing of histologic tissue specimens, automatic serological tests for syphilis (the RPR and Kolmer-Wasserman Test) and the continuous *in vivo* monitoring of the concentration of biochemical constituents.

The book thus serves its purpose as a teaching guide. The inclusion of their evaluation of performance of these instruments in routine clin-



ical chemistry analyses would have been most helpful.—*Doctor Patrick Pinto.*

**ANTILYMPHOCYTIC SERUM.** Edited by G. E. W. Wolstenholme and Maeve O'Connor. 165 pp. with 37 illustrations. Boston: Little, Brown and Company, 1967.

This small monograph is a collection of presentations given at a meeting of the Study Group of the Ciba Foundation on Antilymphocytic Serum held on January 20, 1967. The membership of the Study Group included such well-known immunologists as Humphrey, Batchelor, Gowans, Medawar and Porter. These investigators have joined with other workers in presenting clinical and experimental studies with this material.

The tone of the meeting was apparently set by Humphrey's opening remarks that antilymphocytic serum might be regarded as important as Ehrlich's "magic bullet" in suppressing the immune response. However, the experimental findings presented hardly justify this optimistic statement. Immediately following the introduction, there is a lengthy but disorganized mass of findings concerning patients treated with antilymphocytic globulin while undergoing renal transplantation at the University of Colorado, along with experimental data in animals. The experimental and clinical data often seem conflicting. As noted in the discussion of this paper, however, the disagreement is not only theoretical but extends to the effect of antilymphocytic serum on the size and cellularity of organs involved in antibody production.

The remainder is concerned chiefly with presentations and discussions of the *in vitro* properties of antilymphocytic serum, its mode of action and experimental work. These sections are generally well written.

The monograph is marred by a few spelling errors including the names of certain of the contributors.

This monograph will not be of general interest to most physicians but

will be of value for the investigator concerned with methods of studying delayed hypersensitivity or for prolonging graft survival.—*Harris D. Riley, Jr., M.D.*

**MANUAL ON ALCOHOLISM.** Robert J. Shearer, M.D., associate director, Department of Mental Health, A.M.A. Third Edition. Paper, 87 pp. A.M.A. 1967. 9801-967-25M M.H. #3. \$.50.

"The medical profession has been slow in acting upon the fact that alcoholism is an illness. Clearly, we can no longer avoid our great responsibility in dealing with alcoholism more effectively than we have in the past."

This is the last and most conservative paragraph in an otherwise amazingly comprehensive, concise and objective appraisal of one of the most prevalent multisystem diseases challenging medicine and all the helping professions today.

The National Institute of Health has recently recognized this as the third most prevalent disease and behavioral problem in the nation today. It is outranked in incidence only by the broad field of mental disease and by all heart and vascular problems combined. As a cause of death it now outranks cancer and all other malignant disorders.

Rewritten and summarized in 87 pages are the contributions from 13 authors and authorities in the field. Its greatest deficiency is the absence of a bibliography and more specific information concerning pharmacodynamics of present day medical treatments.

I suspect the coordinating editor is more deeply steeped in behavioral sciences than in internal medicine. However, he has certainly done a most commendable job in a highly controversial and neglected field. I would highly recommend this manual to all those in the helping professions as an admittedly simplified brief and authoritative primer on this most complex and pervasive problem threatening our society today.

For even as it was said in Osler's time, "to know syphilis in all its ramifications is to know medicine."

I believe that today, even more comprehensively, the same might be said, substituting the word "alcoholism."—*Turner Bynum, M.D.*

**CHEMOTHERAPY.** Harris Busch, M.D., Ph.D., Professor and Chairman, Department of Pharmacology, Baylor University College of Medicine, Houston, Texas, and Montague Lane, M.S., M.D., Professor of Pharmacology and Medicine, Baylor University College of Medicine, Houston, Texas. 215 pp. Chicago: Year Book Medical Publishers, Inc., 1967. \$.850.

In the preface, the authors state "It is hoped that this volume will be of value to medical students in their courses in pharmacology and therapeutics, to interns and residents and to physicians in practice." This monograph falls short of fulfillment. It contains chapters concerning the history, chemistry, mechanism of actions, metabolism and excretion, therapeutic applications and adverse effects of a variety of anti-infective and anti-cancer agents. The best sections are those devoted to the chemical descriptions and pharmacologic behavior of various drugs, but these are quite abbreviated and do not constitute the majority of the volume. The chapter on the mechanism of actions of analog inhibitors and antibiotics is rather repetitious of other sections.

One of the stated purposes of this monograph is to provide an up-to-date discussion of chemotherapy. The discussion of therapy of infections is in many cases inadequate and in others inaccurate. Mycoplasmas are mentioned only once and then only briefly. There are several questionable, if not inaccurate, statements such as "actinomycosis is the only fungal disease cured by penicillin." On page 18, J. Ehrlich is credited with the discovery of chloramphenicol whereas on page 55 Burkholder is correctly credited with this honor. Pediatricians with long experience would sharply question the statement "The overwhelming toxicity of the sulfonamides has made physicians leary of their use."

Although this monograph may be



of some value to medical students in pharmacology, it cannot be recommended as a basis for the use of chemotherapeutic agents by house officers and physicians in practice.—*Harris D. Riley, Jr., M.D.*

**PATIENTS, DOCTORS, AND FAMILIES.** Fay C. Lewis, M.D., Garden City, New York. 240 pp. Double Day Company, 1968. \$4.95. Doctor Lewis has written a "folksy" account of many of the aspects of family practice in a small town. Her comments show warmth and understanding of her role in her patients' lives. Certainly, Doctor Lewis has practiced excellent psychiatric medicine during her years of service, and her antidotes of which this book is chiefly concerned are full of practical solutions to the common emotional problems in a general practice. The physician who reads this book will recognize most of the patients and the situations. The layman reading this book will have a better understanding about his relationship to his doctor and the inter-reaction between these

two people engaged in the interpersonal reactions necessary for good health care. It is good reading for relaxation, instruction, and to many may represent an evening of nostalgic memories.

I recommend *Patients, Doctors, and Families*.—*P. Preston Brogdon, Jr., M.D.*

**MICROBIOLOGY.** B. D. Davis, R. Dulbecco, H. N. Eisen, H. S. Ginsberg and W. B. Wood, Jr. New York: Harper and Row (Hoebner Medical Division), 1967. 1,464 pp. \$23.50.

This is an excellent new text of microbiology. In the preface the authors state that the book is designed primarily as a text for students and investigators in infectious disease and microbiology. It proceeds from discussion of general principles to coverage of specific pathogenic micro-organisms. Particular emphasis is placed on the molecular and genetic aspects of microbiology. It is divided into four sections: bacterial physiology, immunology, bacterial and mycotic infections and virology.

In effect, it comprises four textbooks in one.

The section on immunology contains 240 pages which range from the basic definitions of antigen and antibodies to the more recent and exciting aspects of transplantation immunity. The coverage is up-to-date and appropriate. The chapters on bacterial and mycotic infections cover in a commendable fashion the host-parasite relationships of the important disease of man caused by these organisms. The material will be particularly valuable for medical students studying these relationships. The final section covers the fundamental aspects and important principles of virology in a very satisfactory fashion. Following this the various groups of pathogenic viruses are covered in a well-written and readable style.

This comprehensive text fills a real need in this field and is highly recommended for students, graduate students and investigators in microbiology, immunology and infectious diseases.—*Harris D. Riley, Jr., M.D.*

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The **JOURNAL**

DECEMBER  
1968  
Vol. 61, No. 12

of the Oklahoma State Medical Association

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**H**OW MANY TIMES will you hear it this season? Many times as these words are spoken you will receive a gift, a material expression of a gratitude which cannot be verbalized by your patients. Often you will be surprised by the presentation; you may even wonder why a particular patient feels grateful to you; you may reflect upon the blessedness of giving; you may have revealed to you, through a carefully penned note added to a Christmas card, the great significance of something you have said or done while caring for a patient. Whatever your reaction, your ardor for your profession and your compassion for all your patients will be heightened.

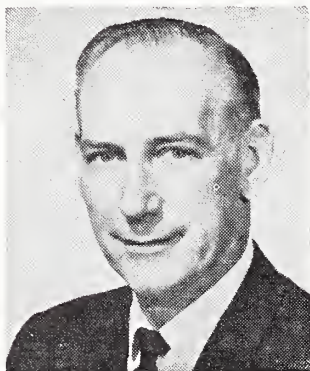
Quite appropriately Christmastime endures as a special time for the expression of gratitude and the posture of gratefulness. As physicians we are frequently appointed as objects of gratitude which, in all propriety, should be passed on to other members of other professions who make it possible for us to provide those services for which we are thanked. We should be grateful to

society for making educational facilities available; to our Divinity for the mental and physical ability to complete the academic and training requirements of our profession; to our teachers and our advisors for sharing their knowledge and their lives with us; to the scientist in an obscure laboratory, the chemist in a pharmaceutical company, the volunteer in a research hospital; to a technician in a blood bank, a nurse at the patient's bedside, a colleague with special skills.

All of these circumstances and all of these people have made it possible for us to play the role of the modern physician, the object of our patients' endowments. Thus, in truth we have become repositories of a gratitude which we are obliged to transmit to its proper recipients. Fortunately in some cases this can be accomplished directly through our contacts with those who served our patients through us. And, where no direct contact is possible, we can discharge our obligation in the posture of gratefulness . . . on our knees, our hands clasped in supplication.

"Merry Christmas, Doctor!"—*M.R.J.* □





This, the Christmas season and approaching New Year, is a time for oneness of mankind that prevails irrespective of our various faiths or antecedents.

Family and community relations are warmer, friends are remembered and resolves are made that the coming year will be better.

We physicians, without season, relate with warmth and concern to those who come to us as patients. What of those who are not our patients?

While maintaining our concern for those who seek our help one at a time, let us also extend our efforts to the community and area level.

Federal paternalism has demonstrated that the irresponsible pouring forth of public monies does not solve problems, the public demand for unneeded services does not identify what is needed and we physicians cannot count all the pebbles on the beach by methodically sorting them one at a time.

We can and are offering answers to real needs when we extend ourselves beyond our offices and practice demands to address ourselves to problems as they exist in the aggregate. This we must also do for no one else can—1969 can be better!

Sincerely yours,

*Scott Henderson, M.D.*



# Rationale for Use of A Balanced Electrolyte in Surgical Patients--A Preliminary Clinical Study

DAVID J. GEIGERMAN, M.D.

*A clinical study comparing a balanced electrolyte and five per cent dextrose in water; a significant reduction of oliguria subsequent to surgical trauma.*

THIS IS A report of a preliminary clinical study comparing two types of parenteral fluids with respect to their influence upon blood and plasma volumes, serum electrolytes, CO<sub>2</sub> combining power, blood pH and urinary output in traumatized surgical patients. The purpose of the study was to compare the effects on these parameters of a balanced multiple electrolyte solution\* with a control solution of dextrose five per cent in water, to determine if the former would produce demonstrably superior improvement in the postoperative status of these patients. The ionic composition (mEq./L.) of the electrolyte solution is as follows: Na<sup>+</sup>, 140; K<sup>+</sup>, 5; Mg<sup>++</sup>, 3; Cl<sup>-</sup>, 98; Acetate (HCO<sub>3</sub><sup>-</sup>), 27; Gluconate (HCO<sub>3</sub><sup>-</sup>), 23. The latter bicarbonate-precursors avoid the use of lactate. In other respects the ionic com-

position of the solution closely approximates that of normal plasma.<sup>1</sup> Dextrose five per cent in water, of course, does not contain electrolytes.

It was considered desirable to study the potential for increased benefit to traumatized patients of a balanced electrolyte solution to replace losses due to trauma and surgery. Although the study was primarily designed to detect possible changes in acid-base and electrolyte balance, preliminary observations revealed that the volume of urinary output showed the widest postoperative variation between patients receiving the balanced electrolyte and those receiving dextrose five per cent in water. Comparative urinary studies are continuing to extend the measurement of urinary output in an additional number of traumatized surgical patients.

## PATIENTS IN THE STUDY

Patients in the study were chosen by randomized selection from the normal surgical schedule at Mercy Hospital in Oklahoma City. Such patients were considered suitable for alternate replacement of fluid losses with an electrolyte or a dextrose solution on the basis of various types of surgical procedures which are routinely treated by the surgical staff of the hospital. The series of

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\*Normosol®-R (Replacement Electrolytes in Water, Abbott).



patients studied totalled 115 of whom 111 patients are included in this report. Four patients are excluded because measurements of urinary output were not complete. Pre-operative hemoglobin and hematocrit determinations were performed on all patients but not all other measurements (blood and plasma volumes, serum electrolytes, etc.) were obtained in every patient for whom urinary output data were complete. The 111 patients with complete hourly urine output measurement comprised 45 males (ages 31 to 96) and 66 females (ages 26 to 93). See figure 1.

Except for one patient who underwent a Porro hysterectomy following a Caesarian section, pregnant patients were purposely excluded from the study. The various operative procedures performed on the patients in the study are summarized in table 1.

METHOD OF STUDY

Fluid replacement with either the balanced electrolyte solution, or dextrose five per cent in water was adjusted according to

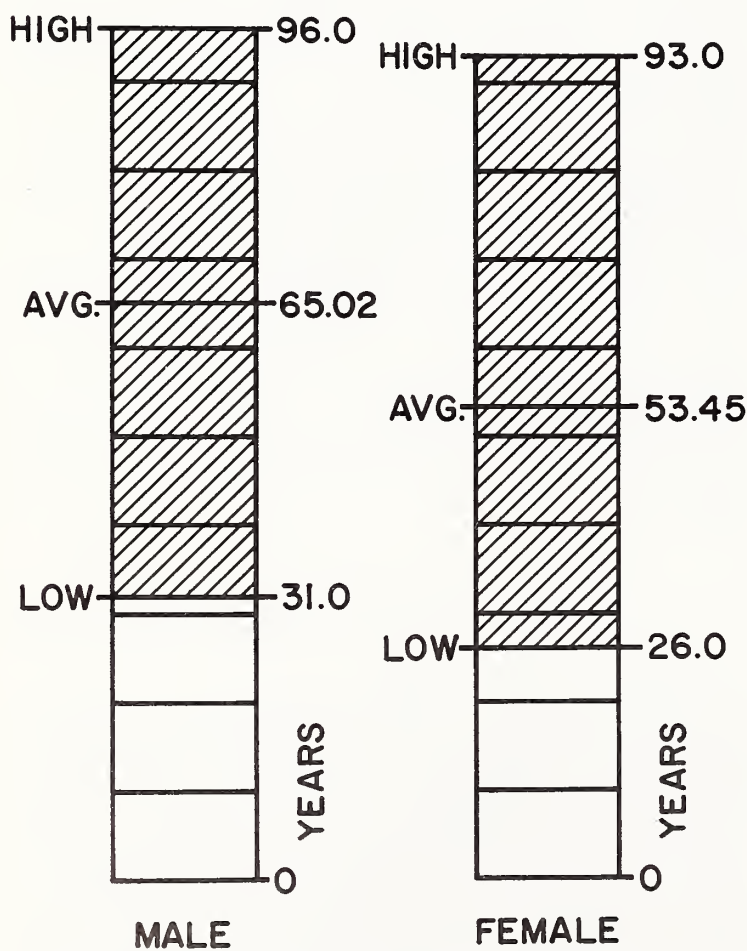


Figure 1. Range and average ages of patients in the study.

Table 1.  
OPERATIVE PROCEDURES

Operation	Male	Female
Radical Head and Neck Procedures	2	1
Gastrectomy, Pyloroplasty, Vagotomy	4	5
Cholecystectomy	1	18
Hysterectomy, Salpingectomy, Oophorectomy	---	16
Colectomy	6	7
Nephrectomy	1	4
Prostatectomy	18	---
Ureterolithotomy, Nephrolithotomy	4	2
Open Reduction Lower Extremity	2	5
All Others	7	8
	45	66
TOTALS		111

need as determined by preoperative measurements of blood and plasma volumes. Hemoglobin and hematocrit were determined only preoperatively. Pre- and post-operative blood volume and plasma volume determinations were accomplished with the use of radio-iodinated human serum albumin\*\* by the well and Volemetron\*\*\* method (accuracy,  $\pm 10$  per cent). Normal blood and plasma volumes were calculated by means of nomograms.<sup>2</sup> To compensate for the inherent error in the radio-iodinated serum albumin determination, variances of  $\pm 300$  ml. for blood volume, and  $\pm 200$  ml. for plasma volume were considered to be within normal limits.

An estimate of blood loss at the time of surgery was made by the anesthesiologist. Blood loss less than 800 ml. was replaced with the balanced electrolyte solution or dextrose five per cent in water. In those patients with blood loss greater than 800 ml., whole blood or packed red cells were used as the situation required. Some patients received only a minimum of fluid whereas

\*\*RISA®-131 [radio-iodinated (<sup>131</sup>I) serum albumin (human), Abbott].  
\*\*\*Volemetron®—registered trademark of the Ames Atomium Company.

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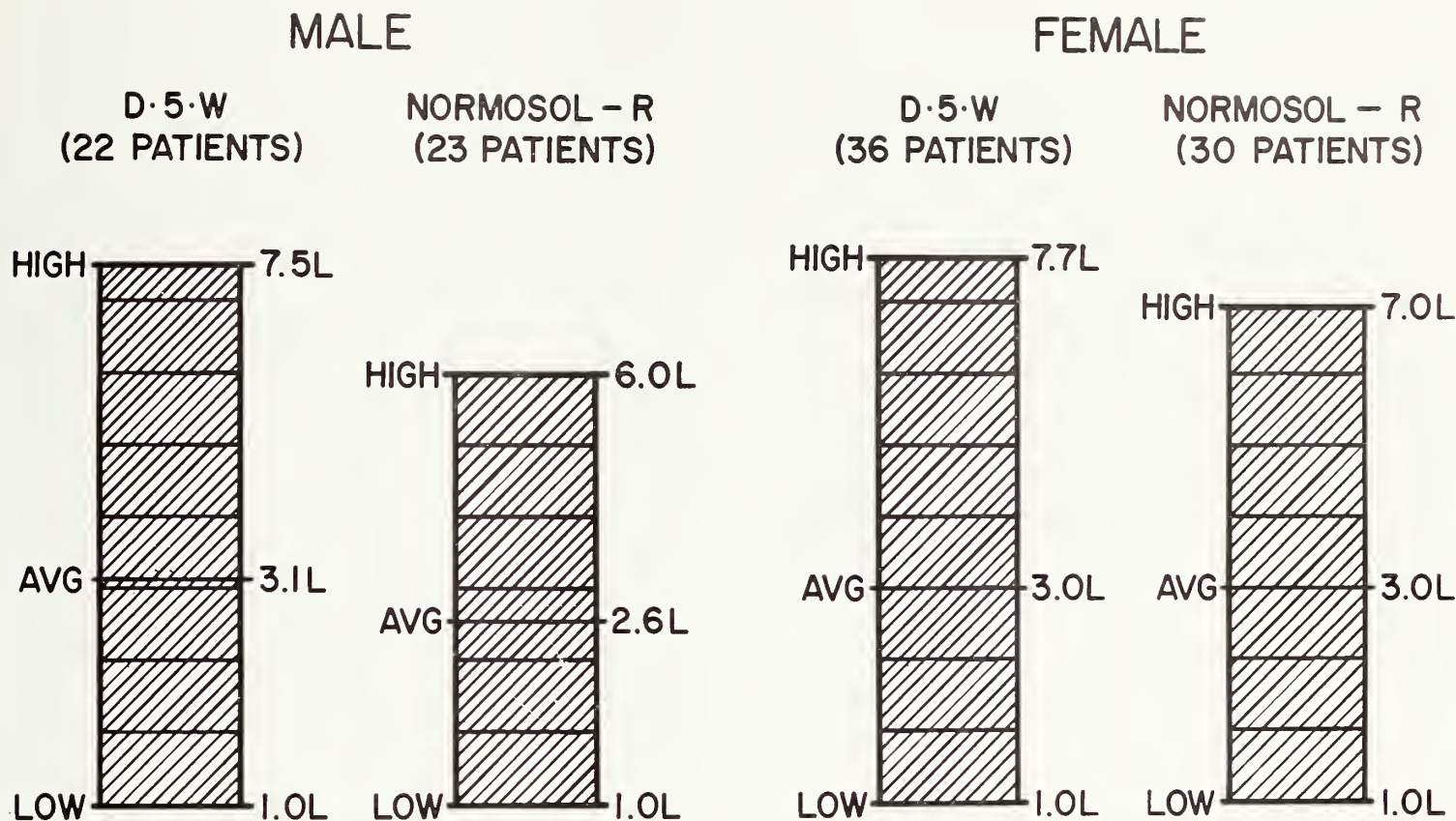


Figure 2. Range and average volumes of replacement fluid administered.

others received up to 7.7 L. during the 48-hour postoperative period of the study.

Serum electrolytes (sodium, chloride, potassium),  $\text{CO}_2$  combining power and blood pH were determined preoperatively and during the 48-hour postoperative period in most of the patients studied.

Urinary output was determined hourly for each patient during the first 24 hours postoperatively. Urine was collected from an indwelling catheter and the hourly volume measured by a Uri-Meter.®\*\*\*\* In patients who had bladder irrigation, the urinary output was determined by subtracting the volume of irrigating fluid from the recovered volume.

#### FLUID REPLACEMENT

The ranges and averages in the volumes of the two replacement fluids which were administered (balanced electrolyte solution or dextrose five per cent in water) during the study are shown in figure 2.

It will be noted that nearly comparable numbers of patients received either the balanced electrolyte solution or dextrose five per cent in water, and that the average replacement volumes of the two fluids were about the same order of magnitude. Of the

balanced electrolyte, an average of 2.6 L. was used in each of the male patients and an average of 3.0 L. in each female. Of dextrose five per cent in water, an average of 3.1 L. was used in each male and 3.0 L. in each female patient.

#### RESULTS

The data obtained in 111 patients are summarized to reduce the length of this report. All measurements were recorded on individual case report forms attached to each patient's hospital chart.

#### *Hemoglobin and Hematocrit*

Only preoperative hemoglobin and hematocrit values were determined. In the 66 female patients, hemoglobin ranged from 8.4 to 18.0 grams/100 ml. (average 13.19 grams). As would be expected in females, many of these patients had hemoglobin values below the normal range of 13 to 15 grams/100 ml. In general, the lowered hemoglobin values correlated with a reduction in hematocrit values. In the 45 males, hemoglobin values ranged from 10 to 16.8 grams/100 ml (average, 14.0 grams) with corresponding hematocrit values. There were fewer subnormal values among the male than among the female patients. The hemo-

\*\*\*\*Uri-Meter®—registered trademark of the Davol Rubber Company.



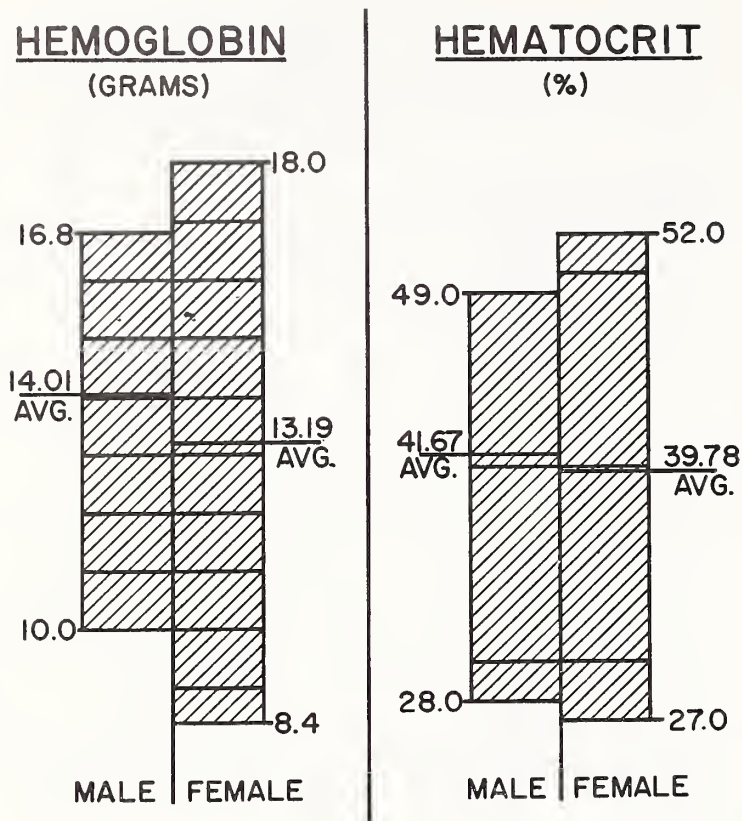


Figure 3. Preoperative range and average values of hemoglobin and hematocrit.

globin and hematocrit values for both sexes are summarized in figure 3.

*Blood and Plasma Volumes and Blood Loss*

Results of the pre- and postoperative measurements of blood and plasma volumes revealed values within corrected normal limits in 16 of the 111 patients reported. Thus there were 95 patients (40 males, 55 females) whose blood and/or plasma volumes were outside the corrected normal values. Among the males whose corrected blood or plasma volumes were abnormal, there were 29 preoperative blood volume variations which ranged from +0.8 L. to -2.8 L. (average -0.8 L.) and 26 plasma volume deviations which ranged from +0.5 L. to -1.7 L. (average, -0.5 L.).

There were 33 postoperative blood volume abnormalities in male patients which ranged from +1.3 L. to -3.4 L. (average, -0.7 L.) and 34 postoperative plasma volume alterations which ranged from +1.2 L. to -1.9 (average, -0.05 L.).

Among the females with abnormal corrected blood and plasma volumes there were 37 preoperative blood volume deviations ranging from +1.9 L to -2.1 L (average,

-0.45 L.) and 32 plasma volume variations ranging from +1.9 L. to -2.1 L. (average, -0.12 L.). The postoperative abnormal results in females revealed 26 blood volume abnormalities ranging from +1.1 L. to -1.9 L. (average -0.5 L.) and 28 plasma volume alterations ranging from +2.4 L. to -1.1 L. (average, -0.07 L.).

Variations in pre- and postoperative blood and plasma volumes were considered to be of incidental importance and of no comparative significance with respect to the type of fluid replacement used.

Blood loss during surgery in the 111 patients ranged from an estimated minimum of 0.1 liter in both male and female patients to a maximum loss of two liters in males (average, 0.6 liter) and three liters in the female patients (average, 0.53 liter). See figure 4.

*Serum Electrolytes, CO<sub>2</sub> Combining Power and Blood pH*

Pre- and postoperative values for serum sodium, chloride, and potassium fell within the usually accepted normal ranges for these electrolytes except in a minimum number of the patients studied. Preoperatively, only nine patients had serum sodium values above 145 mEq./L. and 11 patients had values below 135 mEq./L. Differences between post-

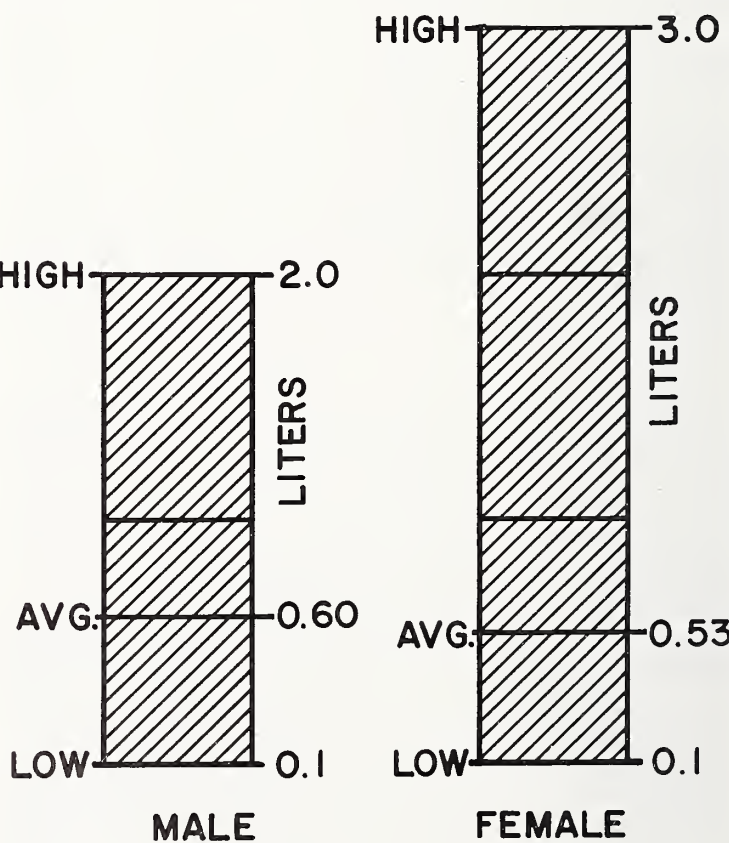


Figure 4. Range and average estimated blood losses.



operative values in patients receiving the balanced electrolyte solution as opposed to dextrose five per cent in water were not remarkable. For example, in two patients receiving the balanced electrolyte solution, serum sodium values were above 145 mEq./L. whereas in 12 patients receiving the same solution, these values were below 135 mEq./L. In one of the patients who received dextrose five per cent in water, the serum sodium was above 145 mEq./L., while in 15 patients who also received this solution, the serum sodium values were below 135 mEq./L.

The results of pre- and postoperative determinations for serum chloride and serum potassium also revealed some variance from normal values in a few patients. None of the differences were considered significant.

Some of the pre- and postoperative values for CO<sub>2</sub> combining power and for blood pH were outside the usually accepted normal limits for these measurements. Such variations, however, were not associated with clinical evidence of acidosis or alkalosis, nor were they considered to have any significant relationship to the type of fluid replacement.

Most of the foregoing departures from normal values were regarded as incidental because of expected variations in the pre-operative status of the patients and the individual response of physiologic mechanisms for controlling electrolyte and acid-base balances.

*Urinary Output*

The most significant results were reflected by changes in the hourly volumes of urinary output that were measured during the first 24 hours postoperatively. For the purpose of this study, an hourly urine output of less than 30 ml. for one or more hours was regarded as evidence of oliguria.

The average hourly urinary output during the 24-hour period for all males and for all females in the study (oliguric and non-oliguric) is summarized in figure 5. No special significance is attached to the higher average output of males as compared to the females in the study. Also, it will be noted that when the hourly urine output is averaged for both oliguric and non-oliguric patients, none was less than 40 ml./hr. Thus,

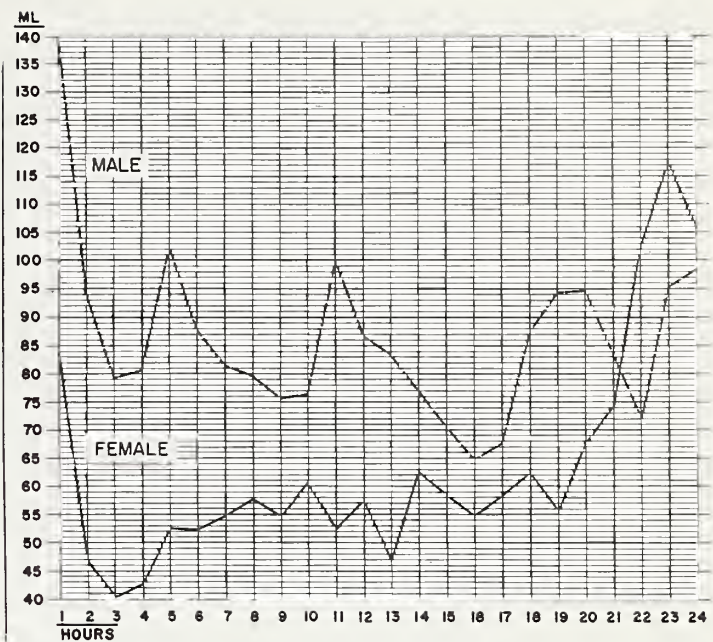


Figure 5. Average hourly urinary output of all patients.

it was considered more significant to compare the hourly output of the oliguric patients with the type of fluid administered.

In making an assessment of possible differences in degrees of oliguria and the type of fluid replacement, the patients were first divided into three categories according to the volume of urine output during one or more of the 24 hours postoperatively: patients with less than 10 ml./hr.; patients with 10 to 19 ml./hr.; and patients with 20 to 29 ml./hr. The numbers of patients in each of these categories for each of the 24 hours of measurement are shown in table 2.

There were no striking differences between the two administered solutions with respect to the severity of the oliguria as reflected by the three categories. In all three categories, however, more patients were oliguric when dextrose five per cent in water was used than when the balanced electrolyte solution was used for fluid replacement. This difference is depicted for all oliguric patients in figure 6.

It will be noted that except during the 21st and 22nd hours postoperatively, there was a much lower incidence of oliguria among the patients whose fluid losses were replaced by the balanced electrolyte than among those who received dextrose five per cent in water.

DISCUSSION

This study has brought to light the apparent advantage in the use of a balanced



Table 2.

## NUMBERS OF PATIENTS WITH POSTOPERATIVE OLIGURIC HOURLY URINARY OUTPUT

(Less than 30 ml./hr. for 1 hr. or more)

Hour Postop.	0 to 9 ml./hr. N	10 to 19 ml./hr. D	20 to 29 ml./hr. N	30 to 39 ml./hr. D
1	0	1	4	8
2	1	7	2	6
3	3	6	5	9
4	1	5	5	9
5	1	2	3	10
6	2	3	2	5
7	2	2	1	6
8	2	5	1	5
9	1	3	1	6
10	2	2	1	4
11	2	2	2	8
12	3	0	2	9
13	3	4	0	11
14	5	2	3	11
15	3	1	0	5
16	5	4	0	3
17	2	2	2	7
18	3	2	1	5
19	1	2	2	10
20	2	4	1	4
21	4	2	2	3
22	2	2	3	1
23	1	3	0	4
24	2	2	1	3

N—Normosol-R

D—Dextrose five per cent in Water

electrolyte replacement fluid for preventing or reducing the incidence of postoperative oliguria. While such advantage has been considered by others, this preliminary report provides a concrete approach to a more definitive study of this subject. At no time was any diuretic agent used. The use of indwelling catheters for collecting the urine output eliminated sources of error which can occur in studies of this kind. It is the author's conviction that adequate urinary output is highly essential to the well being and rapid postoperative recovery of patients who undergo operative trauma. Oliguria or anuria is generally conceded to be one of the major difficulties which must be overcome in the management of traumatized patients.

It is difficult to speculate upon the mechanisms which determine the occurrence or absence of postoperative oliguria. Shires, *et al.*,<sup>3</sup> have stated there are changes in renal hemodynamics during surgery and Moyer<sup>4</sup>

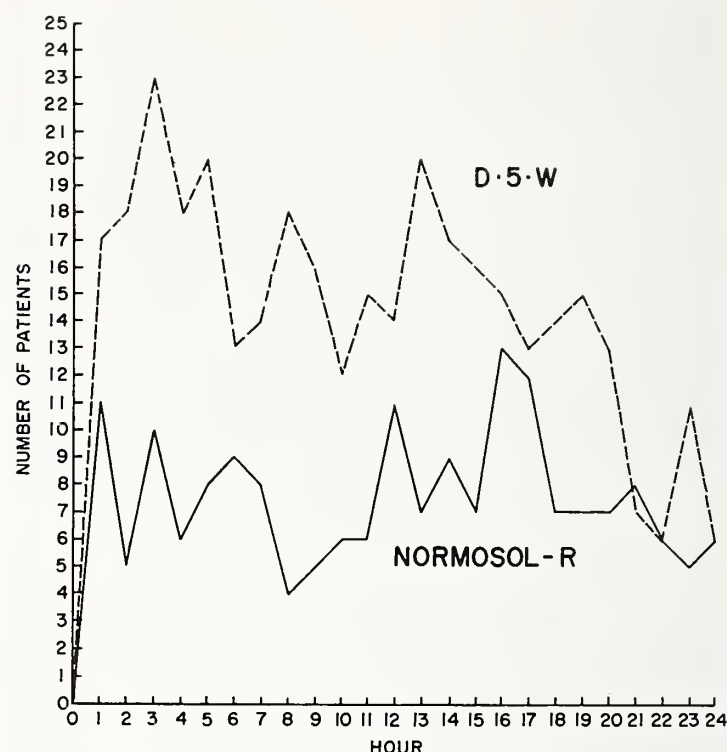


Figure 6. Incidence of postoperative oliguria in patients after fluid replacement.

has indicated there are acute temporary alterations in renal function with major surgical procedures. Using radioactive sulfate, Shires, *et al.*,<sup>3</sup> also have demonstrated a marked acute reduction in the functional extracellular fluid volume in response to a major operative procedure. If this occurs during surgery without fluid replacement, a postoperative salt retention may be cumulative, with accompanying oliguria or anuria. Thus, by giving a balanced electrolyte to replace fluid loss during surgery, the likelihood of oliguria is reduced. Shires, *et al.*,<sup>3</sup> have postulated that urinary retention may be based on increased secretion of the antidiuretic hormone (ADH). An increase in aldosterone secretion also occurs as a response to trauma. There are, of course, various other factors such as the type of operations, age of the patient, anesthetic used, postoperative sedation, pain, anxiety, and integrity of renal secretory function that can influence urinary output.

Although the results of this study cannot be attributed to any single mechanism, there is some evidence that adequate fluid replacement with a balanced electrolyte will overcome much of the effect of the antidiuretic hormone in traumatized patients. It is hoped this preliminary clinical report will stimulate further studies to elucidate more clearly the factors involved.



## SUMMARY

A preliminary study of the comparative influence on postoperative recovery of a balanced multiple electrolyte solution and a control solution of dextrose five per cent in water has been analyzed in a total of 111 patients (45 males and 66 females). The patients received, by random selection, one or the other of these solutions to replace fluids lost during various traumatic surgical procedures. Pre-operative hemoglobin and hematocrit, plus pre- and postoperative (within 48 hours) blood and plasma volumes, blood loss, pre- and postoperative serum electrolytes and blood pH determinations revealed no abnormal changes that were considered unusual or directly attributable to the choice of fluid administered.

Hourly urinary output measurements during the first 24 hours postoperatively indicated that oliguria (less than 30 ml./hr. for one or more hours) occurred in a significantly larger number of patients who received dextrose five per cent in water than those who were given the balanced electrolyte solution.

The observed effectiveness of a balanced electrolyte solution to prevent expected oliguria in patients undergoing surgical trauma was the most significant finding of the study.

## ACKNOWLEDGEMENTS

The author expresses heartfelt appreciation to Mercy Hospital Administration for allowing him to compile these statistics in their hospital. The helpful effort of the Mercy Hospital Nursing Service, Betty Wharton Javine, B.S.M.T. (A.S.C.P.), the Mercy Hospital Isotope Technicians, Bruce Corley and his staff in the Mercy Hospital Computer Center, and editors, Pepper Windle and Carol Stussi, are also gratefully acknowledged.

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# Hyperthyroidism in Oklahoma:

## Including A Comparison of the Death Rates in Oklahoma and the United States

WALLACE B. LOVE, B.S.\*  
R. PALMER HOWARD, M.D.

*This death rate fell as rapidly in  
Oklahoma as in the United States  
after 1946, presumably because of the  
introduction of thiouracil and radioiodine.*

**H**YPERTHYROIDISM was previously a serious condition, but recently it has proven amenable to several therapeutic measures. Once considered mainly a surgical problem, a moderately severe degree of hyperthyroidism was treated by medical means only during the preoperative preparation, or in patients considered poor surgical risks. However, since the second World War great strides in the diagnosis and therapy of thyroid disorders have caused a swing of the pendulum away from surgery as the treatment of choice in toxic goiter.<sup>1</sup>

Mention of goitrogenesis was made in 1936 by Barker and in 1941 by Barker, Lindberg and Wald<sup>2</sup> in a paper concerning the therapeutic use of potassium thiocyanate in hypertension. These investigators noted that several of the treated patients developed symptoms of hypothyroidism. Therefore, it was

logical to assume that thiocyanate and related compounds might prove beneficial in hyperthyroidism. Studies by other investigators<sup>3-8</sup> showed the therapeutic value of the thioamide group of compounds, of which thiourea is the simplest member. The thioamide group includes all the compounds currently used clinically.<sup>9</sup>

In 1942 Hertz and Roberts<sup>10</sup> published a preliminary report in which they suggested radioactive iodine as a treatment for hyperthyroidism. Additional studies by Hamilton and Lawrence<sup>11</sup> in the same year and by Chapman and Evans<sup>12</sup> in 1946 confirmed the value of I<sup>131</sup> therapy. However, the treatment was not widely employed until 1948-1949.<sup>13-16</sup> Since then treatment with radioactive iodine has proven highly effective for the initial toxic manifestations. Once control of hyperthyroidism has been achieved by the use of I<sup>131</sup> therapy there is a lower incidence of relapse than with the anti-thyroid drugs.<sup>17</sup>

In 1950 the first radioisotope diagnostic and therapeutic clinic in Oklahoma was established at the University of Oklahoma School of Medicine. Founding members of this clinic included the clinical endocrinologist, Doctor Henry H. Turner; the radiologist and radiotherapist, Doctor Peter Russo, and several prominent surgeons interested in thyroid disorders.

A search was made of the early Oklahoma medical literature with two purposes in mind: (a) to determine how soon after discovery the newer advances in the knowledge

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of hyperthyroidism were employed by early Oklahoma physicians in the management of this disease, and (b) to uncover statistical data which would give an insight into the rates of death from this condition in the state for comparison with statistics for the nation. In regard to the first purpose, it was found that, from the turn of the century, there was no significant lag on the part of the Oklahoma medical community in appreciating the problems in treatment of the disease. Indeed, early issues of the journals published in the State of Oklahoma reported numerous discussions by physicians concerning both the etiology of hyperthyroidism and the most satisfactory treatment.<sup>18-28</sup> The thiourea derivatives were used therapeutically throughout the state with increasing frequency after 1946. Also, the establishment of the University Hospital Radioisotope Clinic in 1950 was relatively soon after the release of the information that radioiodine therapy appeared safe for extensive clinical trials.

The latter of the two aims proved to be a more difficult task. Early reports of the State Health Department were of no value in this problem. Information concerning the mortality from goiter and hyperthyroidism in the state was unobtainable from the years prior to 1944, as the only data available con-

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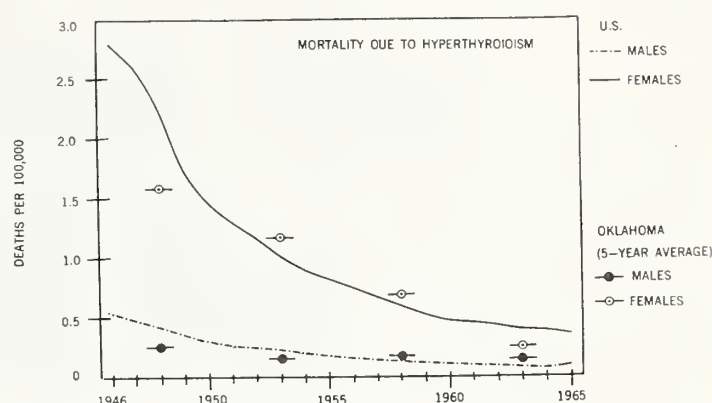


Figure 1. Note the declining death rates for each sex due to hyperthyroidism in the United States and in Oklahoma (Oklahoma data plotted as averages for five-year periods). Note especially the rapid decline from 1946 to 1950 in the national rates.

cerned the major communicable diseases. Since that time, however, the State Health Department has kept concise mortality records for a much wider range of diseases, including hyperthyroidism. By examining the tabulation sheets of causes of death for each year, it was possible to compile a 20-year statistical survey of the mortality rate for hyperthyroidism in Oklahoma. In order to compile a similar survey for the United States as a whole, data were obtained from the annual reports of the United States Bureau of Vital Statistics. The estimated populations for both the United States and Oklahoma for each year were also obtained from this source. It was then possible to chart the state and national mortality rates graphically (figure 1).

In Oklahoma, the annual number of deaths from goiter and hyperthyroidism in each sex has been quite small and variable. Thus, it would be difficult to make meaningful comparisons between the annual death rates for the state and the nation. Accordingly, the graph was prepared to show the national yearly death rates for each sex from hyperthyroidism in comparison with average rates derived from five year periods in Oklahoma (figure 1).

## RESULTS

There has been a marked decrease in the incidence of deaths due to hyperthyroidism in the United States over the past 20 years, accompanied by a parallel decrease in the rates for Oklahoma. The data in both cases are more striking with regard to females owing to the much higher incidence of the disease among females than among males.



## Hyperthyroidism / LOVE, et al.

The deaths for females in the United States fell from 2.79 per 100,000 in 1946 to 1.45 in 1950, and to 0.47 in 1960. The deaths for females in Oklahoma were 1.58 per 100,000 in 1946-50 and fell to 1.17 in 1951-55, to 0.68 in 1956-60 and to 0.25 for 1961-65. The death rates for males in Oklahoma were low throughout the period studied, but a decline was observed from 0.27 in 1946-50 to 0.14 in 1961-65.

### DISCUSSION

The data are consistent with the great strides in the treatment of hyperthyroidism over the past 20 years. The greatest decrease in mortality occurred in the first five years of the survey (1946-1950), when innovations in the medical treatment of the disease began to replace the surgical method. However, since the widespread use of the anti-thyroid (thiouracil) compounds in 1946 occurred three years before the general acceptance of  $I^{131}$  therapy as a method of treatment, it appears reasonable to conclude that the former treatment made the greater contribution to the initial precipitous decline in the mortality from hyperthyroidism.

### SUMMARY

(1) A study has been made of the history of the treatment of hyperthyroidism in Oklahoma.

(2) A statistical survey of the national and state mortality rates from hyperthyroidism over a 20-year period of 1946 to 1965 has revealed similar declines in Oklahoma and the nation as a whole.

(3) It is concluded that the initial pronounced fall in the mortality rates after 1946 was due to the widespread use of the thiouracil derivatives, while a further reduction in the rates has followed the subsequent use of radioiodine treatment. □

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# Emergency Care of the Burned Patient

JOHN A. MONCRIEF, Colonel, M.C.

*Burn trauma involves the entire patient and its proper management extends beyond the treatment of visible wounds and devitalized tissue.*

WHILE THE BURN wound is the most obvious aspect of thermal injury, the immediate care of thermal injury is directed toward correcting the physiologic derangements which attend such injuries and the wound itself is relegated to secondary consideration. All efforts are directed toward stabilizing the cardiocirculatory system and assuring an adequate respiratory exchange.

Although the precise mechanisms are unknown, tremendous volume changes occur in the blood volume and extracellular fluid volume with a sudden drop in the former and expansion of the latter. To compensate for these shifts and the immediate and progressive red blood cell hemolysis, various fluid resuscitation formulae have been de-

veloped. Used properly, these can be of great aid in planning replacement therapy, but they must be used only as a guide to the initiation of therapy and not as a rigid plan. Alterations of fluid administration, both in rate and constituent quantities, must occur in accordance with variations in patient response to therapy.

Although fluid replacement can be accomplished by means of salt solutions alone, the volumes required are very large. Pulmonary edema is a more distinct threat during periods of fluid mobilization and cardiac response is only slightly improved. The use of generous quantities of colloid in the form of virus-free plasma or dextran leads to a much more satisfactory cardiocirculatory response.

Adequacy of resuscitation is determined by observing the state of peripheral blood flow, the sensorium and the rate and character of urinary output. A volume of urine of 30-50 cc/hr is ordinarily sufficient to assure an adequate circulatory response but it is not a universal rule. The urine should be grossly clear of pigment and if necessary an active diuresis must be established in order to assure a clear flow. Diuresis is better accomplished by fluid load alone but it may require an osmotic diuretic for initiation.

Presented as a MEND lecture for Emergency Medicine series at the University of Oklahoma School of Medicine.



The use of whole blood should be reserved for those patients with concomitant injuries requiring red blood cell replacement. While hemolysis and loss of red blood count mass is a constant occurrence and proportional to the severity of thermal injury, loss of plasma volume far exceeds red blood count loss. Administration of whole blood during this period results in aggravation of the hemoconcentration. It should be reserved for the period following mobilization of edema fluid with the characteristic drop in hematocrit. Emphasis should be placed on maintaining good blood flow and not increasing the viscosity by adding more cells.

Regardless of success in fluid resuscitation, all is of no avail if an effective respiratory exchange is not guaranteed. Inhalation of smoke and irritating combustion products results in an inflammatory tracheobronchitis, thick tenacious sputum and impaired ability to clear the respiratory tree. An active cough with some assistance with tracheal aspiration is the most effective treatment. Mucolytic agents such as acetylcysteine are of great aid in such cases.

If the tracheobronchial tree cannot be cleared adequately, tracheostomy may be necessary. Vomiting and aspiration may be a great danger in deep face burns with a tight eschar. If this threat appears imminent, tracheostomy must be done. The stoma is placed at the second or third tra-

cheal ring and the inspired air must be kept moist constantly.

Full-thickness eschars of the extremities may pose an immediate threat to tissue viability. This is a result of the obligatory edema occurring beneath the unyielding circumferential eschar with progressive obliteration of the arterial circulation to the distal tissues. To avoid this latter event, an escharotomy must be done to relieve the constriction. The incision is made through the insensitive full-thickness eschar without need for anesthesia, the deep fascia is left intact and incisions include areas of eschar over major joints where the skin is firmly attached to the deep fascia. Incisions, which may be needed on both sides, are in the long axis of the limb.

Antibiotic therapy is not indicated for the burn wound itself. It may be required for concomitant injuries. All medication should be administered intravenously until after the diuretic phase has passed. Unless this principle is observed, the fluid shifts may result in unpredictable drug absorption from subcutaneous or intramuscular sources.

Tetanus prophylaxis is mandatory and is secured either by a toxoid booster or human antitetanus globulin. Antitoxin is not indicated.

The entire area should be shaved and the burn wound should be cleansed thoroughly with soap and water; loose, devitalized tissues should be removed. If possible, the extremities should be elevated. With face burns, the eyes are examined closely and a cleansing and protective eye program is instituted.

Care of the burned patient requires close, individual, medical attention with hourly modification of treatment to meet the patient's needs. Without such a program, the patient will suffer unnecessarily and mortality will be greater.

US Army Surgical Research Unit, Brooke Army Medical Center, Fort Sam Houston, Texas

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*A graduate of Emory University School of Medicine, John A. Moncrief, M.D., is certified by the American Board of Surgery. He is presently Professor of Surgery at the Medical College of South Carolina. Doctor Moncrief is a member of the American Surgery Association, the Society of University Surgeons, and the American College of Surgeons.*



# The Surgical Management of Heart Block— A Review of the Patients with Implanted Pacemakers at the University of Oklahoma Medical Center

WILLIAM E. PRICE, M.D.

*The benefits and difficulties of permanent cardiac pacing are dramatically illustrated by a review of the experience during the first five years of therapy.*

**H**EART BLOCK was described in the early part of the eighteenth century by Marcus Gerbezius, a full 100 years prior to the classical descriptions by Robert Adams (1826) and William Stokes (1846), the men for whom the syndrome has subsequently been named.<sup>8</sup> Electrical stimulation of the heart had been conceived and attempted during the early part of the nineteenth century.<sup>11</sup> However, Hyman<sup>5</sup> in 1932 was the first to attempt to restart the heart of an intact animal by electrical stimulation. This was repeated by Bigelow and Callaghan<sup>1</sup> in 1950 and, in addition, they showed that rapid electrical stimulation could take over the rate of a normal rhythm and pace the heart. Zoll<sup>14</sup> in 1952 was the first to use external stimulation in order to pace the heart. This

From the Department of Surgery, University of Oklahoma Medical Center.

was usually on a short term basis due to the discomfort to the patient from the stimulation of the muscles of the chest wall.

Within the next few years the advent of open heart surgery produced another group of patients who developed surgical heart block secondary to interruption of the Bundle of His, most commonly encountered in the repair of ventricular septal defects. It was rapidly recognized that this was an injury associated with a high mortality, in the range of 50 per cent.<sup>13</sup> In 1957, Weirich, *et al.*,<sup>13</sup> implanted an electrode on the myocardium at the time of open heart surgery and for a short term paced the heart with an external pacemaker through this internally implanted electrode. The next three years saw many technical improvements and in 1958 Furman<sup>3</sup> described an electrode catheter to be placed transvenously into the right ventricle, driving the heart with an external pacemaker unit. This latter has become a very useful method of pacing the heart during the operative procedure of total pacemaker implantation and, indeed, has now been extended into a totally implantable unit with intravenous endocardial electrode for permanent pacing of the heart.

The first total implantation of an electrical pacemaker was described by Senning<sup>10</sup> in



1958 with a unit that was powered from inside, but charged electrically from outside the body. Greatbatch in 1959 implanted a pacemaker which was powered by mercury cells and this was reported by Chardack<sup>2</sup> in 1960. This was accomplished by placing two electrodes on the ventricular myocardium and implanting the driving unit subcutaneously, usually over the right upper quadrant of the abdomen or in the retropectoral area. The refinements and variations in construction of the various pacemakers and electrodes are beyond the scope of this review. However, two refinements which should be mentioned are the development of the synchronous pacemaker that senses the sino-atrial node impulse from the atrium and paces the ventricles at that rhythm, and the demand pacemaker which senses ventricular depolarization and will not fire an impulse unless there is a delay of one second or a predetermined fraction thereof before the next depolarization. The first total implantation of a cardiac pacemaker at the University of Oklahoma Medical Center was performed in September 1962. This report reviews the total experiences with implanted pacemakers from that date through December 1966 and includes a period of a year or more follow-up of all patients.

#### MATERIAL

Since September 1962, there have been 23 patients who have had pacemakers implanted for complete heart block. The indications for implantation in this series of patients were essentially dependent on symptoms. The patients with operative blocks were paced empirically from an external source until it was evident that spontaneous return was not to be expected before permanent implantation was undertaken. The remaining patients had either syncopal episodes with or without convulsions. Two exceptions were patients who gradually developed progressive congestive heart failure due to their bradycardia. All patients were given a course of medical therapy prior to implantation. This was usually isuprel, but some received cortisone and other drugs. None had permanent implantation before it was demonstrated that medical therapy would not avoid their symptoms. The majority of

patients remained in complete heart block throughout the entire period of observation and medical therapy. Duration of the heart block varied from a few days up to five years prior to the time of implantation. One patient was paced for two years from an external source prior to implantation. At least four patients would move in and out of heart block and essentially these were the ones chosen for the synchronous pacemakers.

Table I outlines the various types implanted in these patients. The synchronous pacemakers and the fixed rate pacemakers with myocardial electrodes all required formal thoracotomy and general anesthesia, while those with endocardial catheter electrodes were totally implanted under local anesthesia. The endocardial leads were inserted through the external jugular vein or the cephalic vein and the tip of the electrode was directed to the apex of the right ventricle. The advantage of avoiding thoracotomy is obvious, but it was not until later

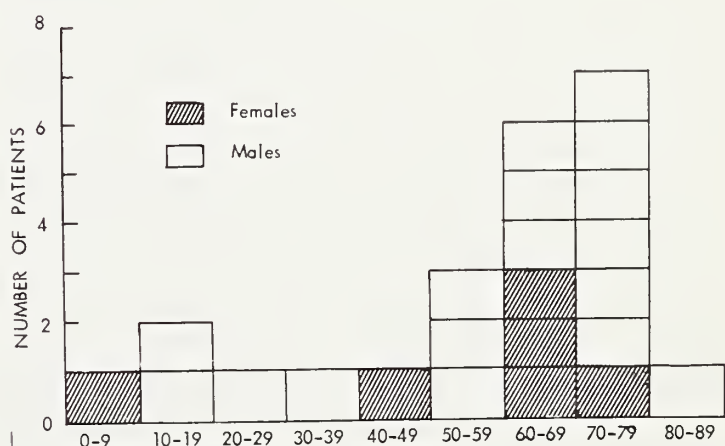


Figure 1. Age and sex distribution of patients who have had pacemaker implantations at the University of Oklahoma Medical Center. September, 1962 through December, 1966.

Since his graduation from the University of Rochester School of Medicine, William E. Price, M.D., has been certified by the American Board of General Surgery and Thoracic Surgery. He is now Associate Professor of Surgery at the University of Oklahoma School of Medicine. He is a Fellow of the American College of Surgeons, the American Federation for Clinical Research, the American Gastroenterological Association, the Oklahoma Thoracic Society and the Society of Sigma Xi.



in this series that the safety of a transvenous lead became apparent.

The age range of these patients is depicted in Figure 1 which emphasizes the highest incidence of the disease in the seventh and eighth decades of life. It also illustrates that 74 per cent of these patients were males, but that the age distribution of onset of complete heart block between males and females is essentially identical.

The etiology of heart block in those patients under 30 years of age was surgery. Approximately 25 per cent of the remaining patients had at least a history of a previous myocardial infarction when they presented with a complete heart block. Sometimes, however, this was many years prior to the onset of the heart block. It seems evident that patients with severe coronary disease would tolerate Adam-Stokes attacks very poorly and one would not expect these patients to represent a large portion of any series. This theory is supported by Harris<sup>4</sup> who reported 15 normal and two near normal coronary arteriogram studies in 19 post mortem hearts from patients with known ante mortem block. It appears that the majority of cases with complete heart block result from small areas of fibrosis involving only the conducting system of the myocardium without affecting myocardial function *per se*. This fibrosis may be due to wear and tear of advancing age, minor ischemic changes, or even myocarditis.<sup>7</sup> The end result is the same. Heart block has been noted in patients with Refsum's disease which is a familial disease characterized by hemeralopia, polyneuritis, ataxia, and paresthesias. Two such patients with heart block have had pacemakers implanted in this hospital and one is included in the present series.

Cordis, Electrodyne, General Electric, and Medtronic pacemakers were used in the patients in this series. Each was manufactured by a company of the same name and each is powered by mercury cell batteries. No superiority of any one pacemaker can be determined from this group of patients.

RESULTS

There is one death in this group of patients that can clearly be attributed to surgery and

that is in a patient who died ten days following surgery of staphylococcal septicemia. This is an operative mortality of 4.3 per cent. Late mortality has included three other patients. One patient died two months following surgery, presumably of progressive congestive heart failure. Another patient died one year following pacemaker implantation of congestive heart failure, and the third patient died of pneumonia two years and nine months following implantation. All three patients who had a late mortality had a functioning pacemaker at the time they were last seen prior to their death. However, none of these deaths was in the hospital and it is not possible to document the function of the pacemaker at the time of death. The over-all mortality in the group to the present time is 17 per cent.

The remaining 19 patients are alive at the present time and six of these have had no trouble with their pacemaker from the time of initial insertion to the present date. The remaining 13 have required some form of subsequent surgery to adjust malfunctions of their pacemaker. Table II summarizes the number of procedures each patient has required and, in an abbreviated fashion, outlines the indications for the subsequent procedures. The most common need for a subsequent procedure has been due to battery failure of the units. It can be fairly well estimated now that the patients with synchronous pacemakers have a battery life expectancy of approximately 20-24 months due to the increased load placed upon the batteries by the synchronization mechanism. The life expectancy of the batteries in the fixed rate pacemakers is not a definite figure. However, the failures begin to appear around 21 months to two years, even though some of the units have lasted four years and longer (table II). The next most common difficulty has been that of a broken electrode.

Table I

EXPERIENCES WITH IMPLANTED PACEMAKERS  
—UNIVERSITY OF OKLAHOMA MEDICAL CENTER

September 1962—December 1966

Fixed Rate Pacemakers	19
Myocardial Electrodes	14
Endocardial Catheter Electrodes	5
Synchronous Pacemakers	4
Total	23



Table II

## COMPLICATIONS OF INTERNAL PACEMAKER UNITS REQUIRING SUBSEQUENT PROCEDURES

- 8 patients required one subsequent procedure
- 5 had battery failure—49 months, 21 months\*, 20 months, 20 months, and 14 months following initial surgery
  - 1 had broken electrode—7 months following initial surgery
  - 1 had foreign body rejection of unit—6 months following initial surgery
  - 1 had endocardial catheter movement—2 weeks following initial surgery
- 2 patients required two subsequent procedures
- 1 patient had battery failure at 14 months and broken lead 9 months later
  - 1 patient had battery failure at 4 months and again 21 months later\*
- 2 patients required three subsequent procedures
- 1 patient had a broken lead at 5 months with body fluid leakage at the site of repair 3 months later and required total replacement 8 months later
  - 1 patient had a broken lead at 2 months which required two more repairs 1 month later
- 1 patient required four subsequent procedures, all for low grade infection and tissue rejection of the foreign body—at 17 months, then at 21 months, 27 months, and 36 months following initial surgery

Total patients—13

\*Patients with synchronous pacemakers

The majority of these were in the earlier procedures when the metal used for the leads was brittle and subject to weakening and breakage from the continual stress. At times this is treated by direct repair of the lead. At other times, it is treated by creating an indifferent lead out of this particular electrode by placing it in the subcutaneous tissue. Finally, there is a degree of foreign body encapsulating, inflammatory response to these implanted materials and tissue necrosis can occur if undue pressure is produced by any of the implanted elements upon the subcutaneous tissue. This accounts for the greatest number of complications in one patient.

The hospital course of these patients following successful implantation was usually seven to ten days unless there was a major complication. All postoperative complications have been reviewed in this article.

## DISCUSSION

A statistical analysis of the results of long term pacing of patients is hindered by the paucity of completely comparable series of non-paced patients with which to compare.

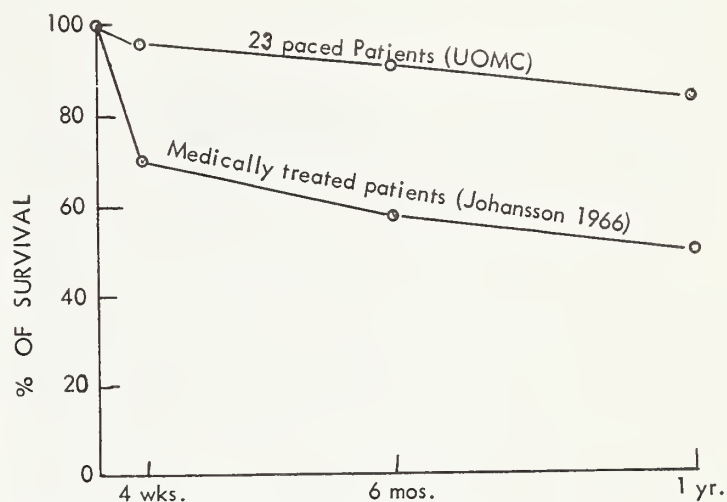


Figure 2. One-year survival rates of the paced patients at the University of Oklahoma Medical Center (UOMC) compared with the non-paced patients reported by Johansson.

The natural history of 224 cases of complete heart block has been reviewed by Penton, *et al.*,<sup>9</sup> who found that the average length of life after onset of complete heart block was 26.2 months. In another series of 193 patients studied by Johansson,<sup>6</sup> a one-year mortality rate of 40 per cent was found in patients treated medically with complete heart block and this rose to 50 per cent if those patients with acute myocardial infarction and digitalis intoxication were included. The 23 patients presented in this series have survived an average of 27.3 months at the present time. If one looks at only those patients that had an implanted unit prior to 1966, the average survival time has been 42 months. Figure 2 compares the one year survival of the patients in this series being reported with the one year survival of Johansson's series of patients treated medically. The upper curve, representing the patients at the University of Oklahoma Medical Center, shows a one year mortality of 13 per cent which is similar to that prepared by Sowton<sup>12</sup> on 544 paced patients from seven different centers which shows a one year mortality of 17 per cent. These compare favorably with Johansson's 50 per cent mortality of non-paced patients at the end of one year.

The operative mortality of 4.3 per cent also compares favorably with other series. In a review of the world literature presented by Siddons and Sowton,<sup>11</sup> the operative mortality in 1,499 patients was 7.5 per cent.

The complications encountered with implanted pacemakers are numerous, but there



are indications that various improvements in instrumentation will reduce these greatly in the future. Battery life, however, is limited and subsequently all patients in this study will require further procedures. Thus, the numbers listed in table II are continually subject to change. The broken electrode problems have been markedly improved by use of superior materials which can withstand the stress placed on it. When electrodes are repaired it is necessary to reseal the unit so that body fluids will not leak in and short out the system. The earlier sealing compounds were inferior to those that are presently available, and leakage was a strong possibility once this procedure was undertaken. This accounts for many of those patients who have required the larger number of procedures. The problem of wound breakdown and secondary infection is always a threat when foreign material is implanted in the body. This will continue to be one of the more dreaded complications, but fortunately it is uncommon.

Follow-up care of these patients requires that they be instructed to observe their pulse rate daily. If they are on a fixed rate pacemaker, they must recognize a change of five or more beats per minute since this signals a malfunctioning of the unit, usually impending battery failure. Competitive premature ventricular contractions are a source of concern and occasionally will respond to digitalis. The demand pacemakers are of value in such a situation. It is not surprising that these patient become most concerned over a possible malfunction of their pacemaker and reassurance from the physician is almost always needed.

It is clear that the quality of life offered these patients after they have been paced is

strikingly superior to that which they have experienced before. Every patient with intermittent or chronic complete heart block who is experiencing symptoms from it should be considered a candidate for cardiac pacing.

### SUMMARY

The experience with implanted pacemakers at the University of Oklahoma Medical Center has been reviewed. Twenty-three patients had implanted pacemakers during our first four years of experience. Early and late mortalities, in addition to complications and reoperations, are listed. It is concluded that cardiac pacing for the patient with complete heart block is a safe procedure which adds to length and quality of life. □

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## Tumor Board Proceedings\*

Edited by  
RICHARD H. BOTTOMLEY, M.D.\*\*

### Case No. 1:

Malignant Teratoma of the Testis

PRESENTATION: The patient is a 24-year-old mongoloid male, who was first seen in August by his physician in Ada, Oklahoma. He was brought to the physician by his mother, who stated that he had developed pain and swelling in the right inguinal region. The physician examined the patient and found a right inguinal hernia. Approximately three weeks ago the patient was taken to surgery, and after the incision was made, it was discovered that the patient had a 5 x 10 centimeter tumor in the right undescended testicle. This was completely removed, and the cord was tied. The pathology report was malignant teratoma of the testis. The boy has done well since then without recurrence at this time. Physical examination reveals that the patient has a mongoloid facies, and has a recent surgical scar in the right inguinal region. His chest x-ray is within normal limits.

\*DOCTOR BOTTOMLEY: Has the patient had a pregnancy test?

PRESENTER: No, he has not.

\*The University of Oklahoma Medical Center Tumor Board meets weekly in Goddard Auditorium of the Oklahoma Medical Research Foundation and is made up of members of the Departments of Dermatology, Medicine, Oral Surgery, Otorhinolaryngology, Pathology, Radiotherapy, and Surgery from the University of Oklahoma Hospitals, Veterans Administration Hospital, and the Oklahoma Medical Research Foundation.

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\*Doctor Richard H. Bottomley—Assistant Head of Cancer Section, Oklahoma Medical Research Foundation, Assistant Professor of Research Medicine and Associate Professor of Research Biochemistry, University of Oklahoma School of Medicine.

\*\*Doctor Carl R. Bogardus, Jr.—Associate Professor of Radiology, Director of the Division of Radiation Therapy of University of Oklahoma School of Medicine.

\*\*DOCTOR BOGARDUS: Do you have a lymphangiogram on him?

PRESENTER: Yes; although some of the nodes are slightly larger than normal, there is no definite evidence of metastatic involvement.

DOCTOR BOGARDUS: Doctor Greenfield, how do you think this case ought to be handled at this point?

\*\*\*DOCTOR GREENFIELD: The only question that comes up in my mind is the possible advantage of a retroperitoneal node dissection. Ordinarily, these tumors metastasize hematogenously and are not characteristically found in lymph nodes. Consequently, a node dissection for these tumors is not always helpful. Also, because of the fact that the testis was undescended, the extent of involvement may include lymph nodes that can't be reached by the ordinary iliac vein dissection. I don't believe there is anything else that would be considered surgically.

DOCTOR BOGARDUS: Usually seminomas metastasize by the lymphatics, and we feel that these patients should, without question, be treated post-operatively with radiation therapy to, at least, the lower pelvic and para-aortic lymphatics. If there's any demonstrable involvement of the lower nodes on the lymphangiogram, then the para-aortic lymphatic chain including the left supraclavicular nodes should be treated.

DOCTOR GREENFIELD: This tumor is radio-resistant though.

\*\*\*Doctor Lazar J. Greenfield—Assistant Professor of Surgery, University of Oklahoma School of Medicine, and Chief of Surgery, Veterans Administration Hospital.



DOCTOR BOGARDUS: This is a problem, of course. The pathologist states the glandular element of this tumor is malignant, but we've treated enough of these and have seen enough of them to realize that you can't really predict the behavior of teratomas on the basis of histology.

DOCTOR GREENFIELD: Apparently there was no evidence of intra-abdominal spread at the time of surgery. In the absence of that involvement would you go ahead and irradiate now or wait?

DOCTOR BOGARDUS: I would still want to treat the right inguinal region and the para-aortic nodes. If this behaves like a lot of other testicular tumors, he could very well have involved lymph nodes. Whether or not his adenocarcinoma will be radio-sensitive is anybody's guess. The metastases would still be small at this point, and quite possibly they would respond to irradiation. If we don't treat, and he does have tumor in the nodes, we'll soon know about it, and if we do treat, we may never really know.

\*\*\*\*DOCTOR SNOW: What tumor dose would you deliver?

DOCTOR BOGARDUS: Considering this as an adenocarcinoma, I would treat it with around 5,000 rads tumor dose. I don't think you could treat this area with much higher than this over an extensive field without problems. If it's going to require more than this, then it's not a sensitive tumor, and a higher dosage would probably not add any further chance of cure.

DOCTOR BOTTOMLEY: I would suggest that a pregnancy test be done because of the possibility that there is a choriocarcinoma element in the tumor; if so, this gives a sensitive way of following the activity of the disease.

DOCTOR BOGARDUS: This is a very good suggestion. These tumors can have other elements that can create problems. What about his general sexual development? I noticed that he seemed to have a normal hair distribution.

PRESENTER: The patient has a fairly normal hair distribution. The left testicle is

small and firm, and everything else is normal.

DOCTOR BOTTOMLEY: It would be interesting to do a chromosome analysis (karyotype) on him. Mongols have an extra 21 chromosome, and they have a higher incidence of acute leukemia and other types of malignant disease than do normal individuals. It has been suggested that the 21 chromosome is related to malignancy in some way.

DIAGNOSIS: 1) Post-operative Malignant Teratoma of the Testis.

TUMOR BOARD RECOMMENDATION: Radiation therapy to the inguinal and abdominal para-aortic nodes to a tumor dose of 5,000 rads.

Case No. 2:

Squamous Cell Carcinoma of the Maxillary Antrum

PRESENTATION: The patient is a 67-year-old white male, who was first seen at this hospital in January, 1967. Chief complaint at that time was difficulty seeing with his right eye and also painful swelling inferior to the right eye. He was referred to the ENT Clinic where he was found to have a very large, tender, erythematous area present over the right malar eminence; also a past history of intermittent epistaxis. Sinus films were obtained at the ENT Clinic, and these revealed destruction of the bone of the superior and lateral aspects of the right maxillary antrum. The patient was admitted to the hospital, and a Caldwell-Luc procedure was carried out for biopsy. The pathologic diagnosis of the tissue obtained was poorly differentiated squamous cell carcinoma. The patient was presented to the Tumor Board, and it was their feeling that he should be treated with radiation therapy followed by a radical maxillectomy. Radiation therapy was completed in April of 1967, with a tumor dose of 7,000 rads. During the interval of this treatment the patient decided that he did not desire surgery following his radiation therapy. He was followed in the ENT Clinic. The patient developed recurrent pain in the same area, and also some bloody serosanguineous discharge from his mouth. He continued to be followed and finally agreed that surgery was in order, and he was admitted to the

\*\*\*\*Doctor James B. Snow, Jr.—Professor and Head of Department of Otorhinolaryngology, University of Oklahoma School of Medicine.



hospital August 11, 1967. On this admission a radical right maxillectomy was performed along with an orbital exenteration. The pathologic examination indicated extension of the tumor beyond the resection margins in the area of the sphenoid sinus and a second operation for exenteration of the sphenoid sinus was carried out. The patient's post-operative course was fairly benign; he was discharged to be followed in the Out-Patient Clinic. On his last visit to the ENT Clinic, there was evidence of local recurrence around the margins of the orbital exenteration. Also, there was felt to be recurrence in the skin flap itself, and probably in the right neck area. His chest x-ray at the present time is normal in appearance. He is presented to the Tumor Board today for further recommendations as to therapy.

DOCTOR BOGARDUS: Doctor Snow, would you comment on the problems that we run into in dealing with tumors in the maxillary antrum?

DOCTOR SNOW: Following his radiation therapy course, he had a good response. The visible tumor on the skin of his face disappeared. A maxillectomy had been recommended after his radiation therapy, but the patient failed to go along with this plan. He returned some six months later after he was again having pain in the area. A maxillectomy was carried out, and in this operation the skin over the front wall of the maxillary sinus was preserved.

The problem is one that occurs frequently following radiation therapy. Is it necessary to resect all areas that were previously involved with tumor? I think it is nearly always necessary. Perhaps the course in this patient could not have been altered in that the metastases that he now has within the lymphatics of the skin are distant to the area that was originally involved with tumor. Some of the skin that was originally involved with tumor over the front wall of the maxillary sinus appears to be free of tumor, and so these metastases in the skin lymphatics may have already occurred prior to the surgical procedure. There seems to be no recurrence of tumor in the deeper areas. When the surgical specimen was examined by the pathologist there was tumor extending to the margin in the sphenoid sinus. The proper thing was done at that

time to return and take more tissue that could be expended in this area. There was no evidence of tumor in the second surgical specimen.

DOCTOR BOGARDUS: Doctor Snow, do you think there's any room now for a reoperation with the present involvement?

DOCTOR SNOW: There's a real question whether surgery ever does much in an individual who has a tumor of the upper respiratory tract, which is so extensive that it invades skin. Now that the tumor is in the skin lymphatics, I don't think that surgery has any place in its management.

DOCTOR BOGARDUS: This man had an extremely good regression of this tumor. We have pictures before and after treatment, which show the tumor to have regressed markedly. I suspect what has happened is that the few small nidi of tumor, that we sometimes can not completely destroy with radiation therapy, were the focal point, and the tumor grew back from there. The present skin metastases are probably the result of the new regrowth of tumor rather than the original tumor. It is just unfortunate that he wasn't operated on. Doctor Snow, how do these lesions usually present?

DOCTOR SNOW: In the report of Larsen and Martinsen, published in 1954, dealing with over 300 patients, 90 per cent of these individuals, at the time they presented, had evidence of bone destruction, either radiographically or on physical examination, and 20 per cent of these patients had cervical metastases. Nevertheless, it really is quite rare to see a patient with carcinoma of the maxillary sinus present with a metastatic node. Metastases occur late, like in this patient, and usually only after skin involvement develops.

DOCTOR BOGARDUS: Doctor Snow, what would you say is the surgical cure rate on these lesions?

DOCTOR SNOW: The only good statistics on the treatment of this tumor is that report by Larsen and Martinsen. The figure of 35 per cent is usually quoted for the five-year survival with a combination of radiation therapy and surgery. I don't know that there are any statistics available for surgery alone.

DOCTOR BOGARDUS: This is a very difficult tumor to treat. An important point to bring up is the fact that when you treat



one of these tumors you face bad odds, to start with. We've treated a few patients who were not able to be operated on for one cause or another. In some of these cases the results were exactly the same as you see in this man. You treat them to an extremely high dose, and yet, the tumor comes back even in the face of this. This is why I think surgery following this procedure is advisable if it's at all possible. Doctor Bottomley, how do you think we could manage him now?

DOCTOR BOTTOMLEY: I think that Methotrexate might palliate him for a while. Did the previous treatment fields include all the areas that are now involved?

DOCTOR BOGARDUS: Unfortunately, the involvement that we can see now lies well within our previous fields, so radiation therapy really has nothing else to offer him. For two good reasons: one being that the recurrences are in an irradiated area, and secondly, the tumor that is present now is descendant from the original tumor that survived the first course of radiation therapy, which means it's a lot more radio-resistant than the original lesion. I think these two factors together make it impossible to reirradiate him at all.

DOCTOR BOTTOMLEY: Well, I think that Methotrexate as palliation is the only recommendation we can make now. Methotrexate is an antifolic acid drug which is

quite effective in the treatment of acute leukemia and also gives 30 to 40 per cent temporary remission in squamous cell carcinoma of the head and neck as previously reported by Condit and other workers. The remissions are only temporary, but because of the chance for relief of pain we feel that a trial of chemotherapy is worthwhile. We usually give the drug as a single intravenous injection every two weeks in a dose of one to three mg/Kg. A small dose is usually given first and then increased if no signs of toxicity occur. The patient must be studied for evidence of impaired renal function. The white blood count, platelets, and hematocrit are determined before each subsequent dose of medication and the dosage is decreased or stopped if the WBC is depressed below 3500/cu. mm. Other signs of toxicity include mouth ulcers, nausea, vomiting, and anorexia, and the patient is always questioned about these. The dose is then adjusted up or down, depending on the response to the previous dose. We will be happy to see him in the University Hospital Oncology Clinic, and will let you know how he responds to therapy.

FINAL DIAGNOSIS: 1) Recurrent Squamous Cell Carcinoma of the Maxillary Antrum.

TUMOR BOARD RECOMMENDATION: Patient to be treated with Methotrexate intravenously at two week intervals for palliation. Additional surgical and x-ray therapy cannot be given. □

## **ATTENTION ALL OSMA PHYSICIANS**

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## Hospitals Balk At Medicaid Payments

Oklahoma hospitals, at this writing, are resisting the efforts of the State Department of Public Welfare to change the method of reimbursement for the hospital care of welfare recipients (Title XIX, Medicaid).

The issue over the payment method has been occasioned by rising utilization and costs of the Medicaid program coupled with the problem of a relatively fixed annual budget.

Welfare officials say the state can only support a Medicaid program of about \$60 million a year, but utilization and rising costs have driven expenses beyond that figure, and the welfare department's reserves are at an all-time low.

To balance the budget, the welfare department has cut the scope of benefits (but not the method of payment) for both hospital and medical care on several occasions during the last year. Recently, however, a reduction in payment to hospitals was proposed, and here is where the Oklahoma Hospital Association and the Department of Public Welfare found themselves at a virtual impasse.

Since July 1st, 1966, hospitals have been paid their audited costs (based on monthly cost estimates and retroactive adjustments following an audit at the end of the accounting year). At the request of the department to find an alternate method for paying hospitals, a committee of the Oklahoma Hospital Association recommended that hospitals be paid 110 per cent of their last year costs, with no retroactive adjustments. The report was rejected at the annual meeting of the OHA, however, and officials of both the association and the department met with federal representatives in Washington in an attempt to clarify the department's obligation to pay "reasonable costs."

Hospital administrators are contending that the 110 per cent formula

will not adequately cover the expectations for rising operational costs, and that any deficit in welfare reimbursement will have to be passed on to private patients.

The department's Advisory Committee on Medical Care, at a meeting held on November 21st, approved a resolution which contained the following recommendations to the Oklahoma Public Welfare Commission:

1. Each hospital having a contract that will terminate on December 1st, 1968, be offered a new contract for December, 1968, January and February, 1969, providing that the hospital will be reimbursed during such period for the number of compensable days on the basis of 110 per cent of the hospital's previous fiscal year's average per diem cost, it being anticipated that the reasonable cost of the hospital during such period will increase ten per cent above its previous year's average per diem cost.

2. A hospital not entering into a new contract for such three-month period be paid the same per diem rate of reasonable costs that was paid to the hospital by the Department of Public Welfare for in-patient services for the hospital's last fiscal year.

The cost-budget dilemma is not an exclusive problem of Oklahoma's Medicaid program. In fact, a nationwide economic illness has beset all programs, and Oklahoma's has been able to outlast most in maintaining a comprehensive set of benefits and in paying reasonable amounts for services.

Nursing home owners say that they cannot survive much longer on the \$8 per day payment presently allowed for Medicaid patients, and the economic impact of this problem is significant because the aggregate payment to nursing homes represents

the largest portion of the total budget.

Physicians are still paid their "usual, customary, and reasonable" charges, but medical benefits to Medicaid recipients have been curtailed by eliminating injectable drugs, cutting virtually all reimbursement for outpatient diagnostic tests, and by placing limitations on physicians' calls at the office, home and nursing home. The welfare department's Advisory Committee also voted to place a \$1,000 ceiling on any single surgical procedure and to limit liability to \$10,000 on any one illness (transplants, etc.). □

## New Committee Begins Laboratory Survey

A voluntary check sample laboratory survey is being made available to member-physicians by a new OSMA committee.

During the May Annual Meeting the Board of Trustees recommended and the House of Delegates created a new OSMA Committee on Laboratory Quality. Its mission was to develop programs to offset the criticisms leveled at medicine alleging that laboratory work done in the physician's private office is of poor quality.

The creation of the committee itself put an end to the allegation that organized medicine was not concerned about laboratory medicine. The committee's institution of the laboratory check sample survey will accomplish a twofold purpose. It will show the public that organized medicine is doing something about the situation and it will give the physician an opportunity to improve the quality of his laboratory procedures.

Working with the College of American Pathologists, the committee is making available to OSMA member-physicians the CAP Basic Laboratory Survey Series for evaluation of



laboratory performance in their offices. This joint effort will mark the first time that the survey series has been made available to an entire state association.

Participation in the survey will cost \$100. Charge for the survey materials is \$87.50 and the additional \$12.50 is for the OSMA office expense. This latter fee is necessary since the Board of Trustees required that the check-sample survey be a self-supporting program.

All OSMA members received a letter and a descriptive brochure on the program in early December. In the letter, OSMA President Scott Hendren, M.D., and President-elect H. E. Denyer, M.D., urged all physicians to participate in the program. They stated, "Certainly each of us who does laboratory work in our own office assumes that it is reliable. There are some who say it is not. Why not find out ourselves and by ourselves? The Committee on Laboratory Quality plans to use the information obtained from these surveys to plan future educational programs in the field of office laboratory medicine."

In addition to the descriptive brochure, each letter also contained a prepaid business reply envelope addressed to the OSMA. This envelope will serve as a preliminary survey to ascertain the number of physicians interested in enrolling in the CAP program, the number already enrolled in a program, the number not doing enough tests to justify participation, the number involved in a group that is participating in a survey already, and those who do not wish to participate at all. Because of the importance of this preliminary survey, all physicians are urged to fill out the envelope even if they are not interested in participating in the CAP program.

Physicians who do choose to participate will receive the CAP Basic Laboratory Survey Series. This includes four check-sample kits, one each to be received in March, May, August, and October. After running tests in their office these samples will be returned to the American

College of Pathologists and the test results will be compared to the known values of the samples. In addition, these test results will be compared with the test results received from other physicians throughout the United States. The physician will then receive a computer print-out sheet showing his results, the actual make-up of the sample, and his results compared against the average of all other physicians participating in the program.

This interlaboratory comparison will allow the physician to evaluate his methodology and procedures and the print-out will indicate any outdated methodology and will point out the need for change. It will detect those procedures which require re-evaluation and will provide the physician with sufficient data to guarantee the highest quality of laboratory testing and results.

Requests for participation in the check-sample program must be received in the OSMA Executive Office in Oklahoma City before January 10th, 1969. □

## Legislative Workshop Plans Progressing

OSMA's Legislative Committee has announced plans for an all day workshop to discuss medical legislation. Raymond F. Hain, M.D., committee chairman, appointed Edgar W. Young, Jr., M.D., John W. Drake, M.D., and Richard D. Stansberry, M.D., to make arrangements for the session and prepare a program agenda.

"We're fortunate," said Hain, "to have Doctors Stansberry and Drake assist in this effort because both have actual legislative experience. Doctor Drake served as a House member in the 30th Legislature and Doctor Stansberry is serving his second term in the Senate."

Doctor Ed Young, El Reno, has agreed to serve as chairman of the special committee and gave a tentative date of January 19th. "There is a lot to be covered," said Doctor Young, "and I foresee this as a hard working but very enlightening workshop. The committee is going to

plan a program that will hopefully allow for full participation from those attending. There will be no 'stuffy' lectures; we're going to try and expose every member we can to legislation that we will be facing in the upcoming session."

Doctor Hain, in announcing the appointments, reminded committee members that each year an increasing number of bills are introduced in the state legislature that affect practicing physicians. ". . . our problem is to inform our membership on the merit of these bills and secure a proper response. The creation of the Legislative Liaison Council,\* and the Liaison Council Workshops such as the one we will conduct in January can provide the stimulus we need. Too many of us are unaware of the impact of state laws. We were so engulfed by Medicare and Medicaid that we think all medical legislation comes from the national level. Last year we reviewed and took positions on 57 bills and this year the load looks even heavier."

The medical association carries out one of the most active lobbying programs at the State Capitol. This is due to its broad interest in the public health and welfare, in contrast to other associations which traditionally sponsor only one or two self interest bills. Moreover, the OSMA and the Oklahoma Academy of General Practice maintain a first-aid station, staffed by a physician, throughout the legislative session.

Specific legislation to be studied at the workshop includes

- Laboratory licensure
- Workmen's compensation
- Dispensing optician licensure
- District Boards of Health—a health department proposal
- Hospital lien law
- Temporary hospitalization of the mentally ill
- Abortion bill
- Uniform anatomical gift act
- Nurses bill

The committee indicated that this was only a partial list since prefilings has just started. □

\* (A group of doctors interested in state politics from each Legislative district in the state.)



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## OSMA Expands Headquarters Building

A special session of the OSMA House of Delegates has approved additional plans for expansion of the OSMA Executive Office in Oklahoma City. Meeting on November 17th, the House voted that a basement should be included in the expansion and that this portion of the project should be financed entirely from the association's reserves.

During its May meeting, the House had approved preliminary plans for the expansion and had authorized the OSMA Board of Trustees to work out the final details. Since the recommendation to include a basement in the project was a departure from the original plan presented to the House, the Trustees felt that the delegates should be given a chance to accept or reject that portion of the project.

The building expansion was originally recommended by the association's Committee on Planning. In their report to the May House of Delegates, the committee pointed out that the present building was constructed in 1956 to accommodate six staff employees and to provide meeting facilities for association councils

and committees. There are presently eight staff personnel, and the volume of activities is estimated to have doubled since the headquarters building was constructed.

In its report the committee stressed the fact that the problem of inadequate space exists in the areas of filing and record storage, work-room facilities, private office space for staff personnel, and conference rooms for growing numbers of physician meetings. The committee estimated that an additional 2,000 square feet of space would be necessary to meet current and future needs.

Since the expansion would require considerable outlay of association savings the committee investigated the possibility of leasing space to other compatible professional organizations. Prior to the May House of Delegates meeting, the Board of Directors of the Oklahoma County Medical Society voted unanimously to work with the OSMA in developing a lease program. The society would require about 1,000 square feet of space and this has now been incorporated into the building plan.

It is estimated that the entire project, including the basement and the county society office area, will cost approximately \$72,000-\$75,000. This would add an additional 2,000 square feet of office space, 1,000 square feet of basement-storage space for use by the association, and an additional 1,000 square feet of office space for use by the Oklahoma County Medical Society.

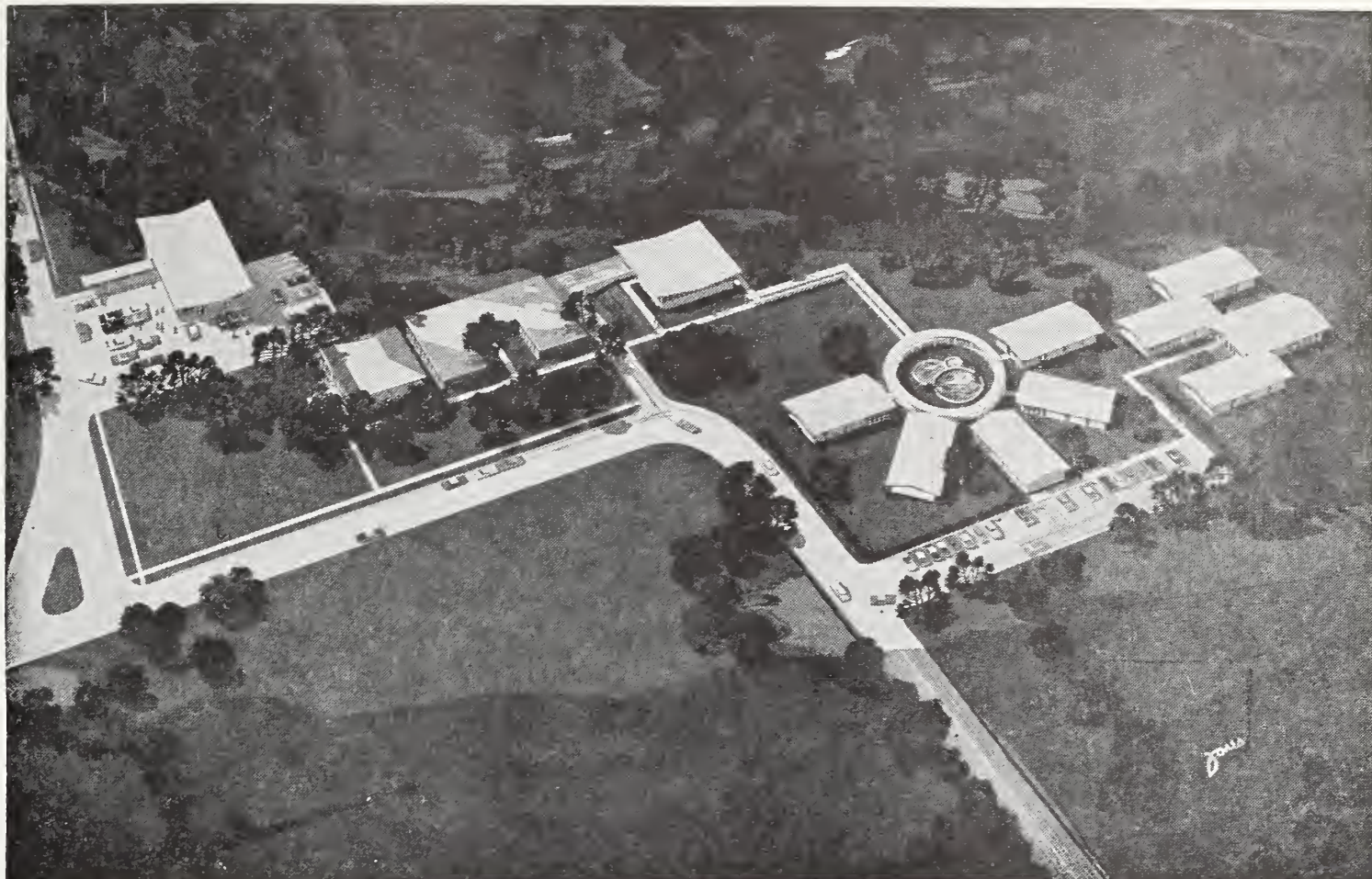
The OSMA will make a cash down payment on the construction costs and will pay for the basement construction entirely out of the association's reserves. A 15-year first mortgage will then be taken for the amount remaining. It is estimated the mortgage will be approximately \$40,000, and that an additional \$10,000 will be needed to furnish and equip the new additions. The county society lease is expected to retire the mortgage.

The association is working with the architect firm of Nusbaum and Thomas, Architects-Engineers, Edmond, Oklahoma. Construction on the new addition is expected to start early in 1969. □



The expanded headquarters facility will appear as above when completed in August, 1969.





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## Alcoholism Subject Of February Meeting

Over 1,000 persons are expected to attend the Third Statewide Conference on Mental Health on February 6th in Oklahoma City. The subject of this year's conference will be "Alcoholism."

The all-day meeting will be held in the Sheraton-Oklahoma Hotel and is being planned by the OSMA Committee on Alcoholism in cooperation with the Council on Public Health. Invitations to attend the meeting are being extended to all groups having any contact with alcoholics or the problems created by alcoholism.

The program will cover the medical, legal and governmental aspects of alcoholism. The first speaker will be Fred Harris, Senior United States Senator from Oklahoma, on the sub-

ject "Government's Role in the Problems of Alcoholism."

Bob Lester, Director of the Oklahoma Department of Public Safety, will present "Oklahoma, The Law and Alcoholism." Robert L. Raleigh, M.D., Director of the Laboratory of Industrial Medicine for Tennessee Eastman Company, Division of Eastman Kodak Company, will discuss "Accidents, Industry and the Alcoholic."

Following a lunch break, Alfonso Parades, M.D., Associate Professor of Psychiatry for the Jefferson Medical College of Philadelphia, will present "Responses of Alcoholics to Motion Pictures of Their Own Behavior." He will be followed by Bertram S. Brown, M.D., Deputy Director of the National Institute of Mental Health with the subject, "The Program Politics of Alcoholism."

A member of the General Service Office of Alcoholics Anonymous, Mrs. Cora Louise B., will describe the workings of the A.A. in her presentation "Alcoholism on the Local Level."

The last portion of the program will feature short presentations by local mental health, public health and political leaders. The panel will consist of Rex Privett, Speaker of the Oklahoma House of Representatives; Finis Smith, President Pro Tempore of the Oklahoma State Senate; Alfred Glass, M.D., Director of the Oklahoma Department of Mental Health; A. B. Colyar, M.D., Director of the Oklahoma Department of Public Health; and Lloyd Rader, Director of the Oklahoma Department of Public Welfare.

According to Doctor Charles E. Smith, Jr., Chairman of the OSMA Committee on Alcoholism, the physician attendance at this conference is expected to be extremely high. "The problem of alcoholism is seen by the physician almost every day," he stated. "When called on by the alcoholic or his family for help, we often feel helpless. Perhaps this conference will give us a fresh outlook and suggest some new approaches to this problem." □

## DEATHS

CARL RICHARD EARNEST, M.D.

1934-1968

An Oklahoma City neurosurgeon, Carl Richard Earnest, M.D., was killed in an airplane crash near St. John, Kansas, Friday, November 9th, 1968.

Born in Shawnee, Oklahoma, Doctor Earnest came to Oklahoma City in 1956. He graduated from the University of Oklahoma School of Medicine in 1960, where he was Assistant Clinical Instructor in Neurosurgery. He was a member of the Oklahoma Neurological Society.

RAYMOND C. GENTRY, M.D.

1907-1968

Raymond C. Gentry, M.D., 61, a long-time Bartlesville physician died in Tulsa, November 11th, 1968. A native of Wayne, Oklahoma, Doctor Gentry graduated from the University of Oklahoma School of Medicine in 1932. He first entered practice in Sweet Springs, Missouri and moved to Bartlesville in 1937.

Doctor Gentry was a member of the Oklahoma Chapter of the American Academy of General Practice and the Southern Medical Association.

O. S. SOMERVILLE, M.D.

1871-1968

A pioneer Bartlesville physician died November 12th, 1968. O. S. Somerville, M.D., 97, was born in Jackson County, West Virginia. He received his medical degree from Louisville Medical College in 1894. After ten years of practice in his native state, he came to the Indian Territory in 1904. The following year he opened his practice in Bartlesville.

Doctor Somerville was a charter member of many organizations including the Oklahoma State Medical Association and the Washington County Medical Society. He held a Life Membership in the Oklahoma State Medical Association in recognition of his years of devotion and work for his profession.

## Association Seeks Medical Student Jobs

At the request of the OU Medical School Chapter of the Student American Medical Association, the OSMA Board of Trustees and its Committee on Student Employment are striving to find summer employment for sophomore and junior students.

To date, state physicians have responded by offering 62 jobs in their private offices, laboratories, hospitals and nursing homes. The students desire employment in the private sector of the health care industry (in contrast to government opportunities) during July and August of 1969.

Student AMA officials are presently assigning individual students to specific job openings. Those offering jobs will be contacted by the OSMA committee regarding the stu-

□



dent applicant, and interviews will be arranged.

The OSMA committee stresses that the advantages of the job program are twofold: Physicians and health institutions can avail themselves of high caliber talent, and the students can profit from the learning experience. The OSMA-SAMA activity, however, is not associated with the medical school's teaching program.

Students are requesting minimum salaries of \$300 a month, although many of the offers exceed this amount and some include room and board.

Physicians interested in taking advantage of this excellent manpower resource should contact Harlan Thomas, M.D., Chairman of the Committee on Student Employment, P.O. Box 18696, Oklahoma City, giving the salary range and a job description. Other members of the association's committee are George B. Gathers, Jr., M.D., and Tom C. Points, M.D. □

## BOOK REVIEW

**ANESTHESIA FOR INFANTS AND CHILDREN.** Robert M. Smith, The C. V. Mosby Company, 1968, 3rd Edition.

This excellent book on pediatric anesthesia has reached its third edition with very well deserved prestige. It provides a large amount of information on this topic chiefly derived from the extensive experience of the author. This book is useful not only as a basic textbook in anesthesia but also as an excellent reference source for all concerned with this field in infants and children—pediatricians, surgeons, anesthesiologists and medical students. All the various aspects of anesthesia in children, including the physiological, biological, behavioral and other factors determining the child's response to anesthesia are very well covered in the book. The technical aspects of anesthesia and use of equipment are covered in a scientific and practical fashion. The book is written in a very readable style and the pictures, tables, and other illustrations are of excellent quality.—*Thomas Rubio, M.D.* □

## Miscellaneous Advertisements

**PATHOLOGY RESIDENCIES AND INTERNSHIPS** available in 600-bed general hospital. Fully approved four-year program in anatomical and clinical pathology. Average annual specimens and tests—348,587. Interns — \$6300; residents — \$8100 up. Board and laundry. Charles B. Mitchell, M.D., Director of Laboratories, Harris Hospital, 1300 West Cannon, Fort Worth, Texas 76104.

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**ANESTHESIOLOGY RESIDENCIES** available—Fully approved two-year program in 600-bed general hospital includes neurosurgery, thoracic, and cardiovascular surgery. Annual anesthetics administered—over 13,000. Stipend—\$8100 and \$9300. Board and laundry. A. N. Heinrichs, M.D., Director, Department of Anesthesia, Harris Hospital, 1300 West Cannon, Fort Worth, Texas 76104. □

Plan to Attend

### 1969 OSMA ANNUAL MEETING

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MAY 15 - 17



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